THE ORCHESTRA AND ORCHESTRAL MUSIC

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BY W·J·HENDERSON

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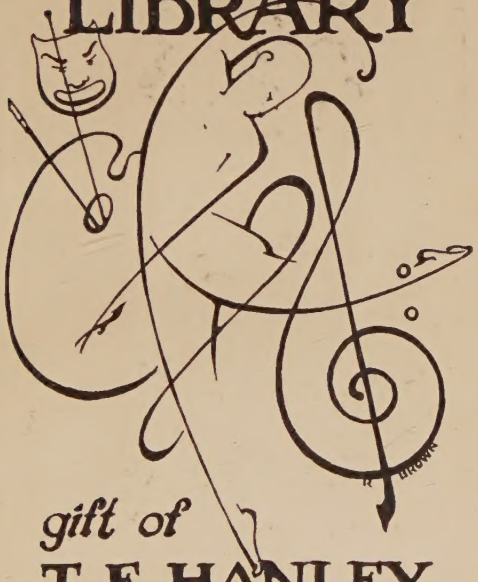

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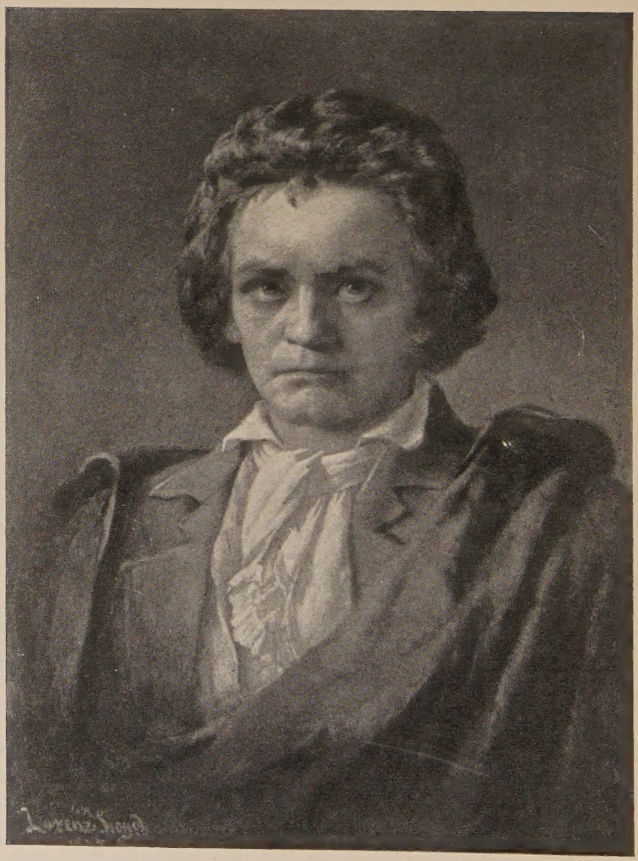

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The Orchestra

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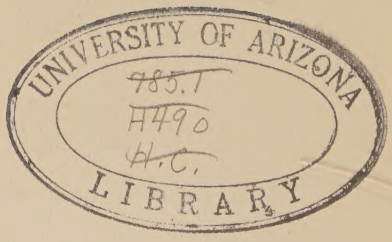

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Preface

This is not a text-book. It is not a treatise on instrumentation. It is not written for musicians, nor primarily for students of music, though the latter may find in it information of some value to them. This is simply an attempt to give to music lovers such facts about the modern orchestra as will help them in assuming an intelligent attitude toward the contemporaneous instrumental body and its performances. The author has endeavored to put before the reader a description of each instrument with an illustration which will enable him to identify its tone when next heard in the delivery of the passage quoted. Some account of the distinctive nature and functions of the strings, the wood, the brass, and the percussion instruments has been given. With this account go hand in hand some remarks on the development of methods of scoring. The reader will not find such historical matter in any other book with which the present writer is acquainted. Neither will he find anywhere else a history of the

development of the conductor, which is given in this volume. The author has endeavored to make his work complete by describing the duties of the conductor and the requisites of good orchestral playing, and by recounting briefly the story of the growth of the orchestra and the development of its music. All other books on the orchestra which the author has seen are for the professional musician. In making one for the amateur of music the writer hopes to supply a need.

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PART I

How the Orchestra is Constituted

I

Instruments Played with the Bow

THE modern orchestra is a musical instrument upon which a performer, known as a conductor, plays compositions written especially for it. It is true that an orchestra is a collection of instruments, but these are intended to be so distributed and operated that the result shall be homogeneous, the effect that of one grand organ of sound. Within itself the orchestra embraces a wide variety of tone-qualities and many grades of power and brilliancy, and these are due to the presence of several different families of instruments, each having general qualities, with special traits in the individuals. It is by causing these different families to work together or separately that the composer achieves the expression of his thought, and it is by governing wisely the operations of the individual members and the families that the conductor conveys the composer's design to the hearer.

The orchestra of to-day is the result of a se-

ries of interesting developments, of which some considerable account will be given in this volume. But it is necessary before that development can be traced that the reader shall take a bird's-eye view of the orchestra as it now is. Subsequently we shall examine its constitution in detail, but at present we shall simply glance at its general features. Orchestras are not the same for all compositions. Composers select their instruments in these days according to the purpose of the work in hand. But the orchestra employed by Beethoven and his immediate successors in their symphonies is the typical orchestra for independent performance. Curtailed or extended as it may be for special effects, its general plan remains undisturbed.

The modern orchestra, then, is composed of the following instruments: Flutes, oboes, clarinets, bassoons, horns, trumpets, trombones, drums, and other instruments of percussion, violins, violas, violoncellos, and double-basses. These instruments naturally divide themselves into families. Flutes, oboes, clarinets, and bassoons are instruments of wood, and are caused to sound by the blowing of the breath of the players. They therefore form a single group or family, known as the "wood-wind," or, more briefly, the wood. Horns, trumpets, and trombones are instruments of brass, and they form

a family known as the brass. The percussion instruments (drums, triangles, cymbals, etc.) are sometimes called "the battery." Violins, violas, violoncellos (usually called 'cellos), and double-basses are all stringed instruments played with a bow, and they form a group known as "the strings."

At present the reader will not be invited to study the characteristics and possibilities of these groups and their combinations, but will be asked to acquaint himself with the individual instruments composing them. The foundation of an orchestra is its body of strings. Two principal reasons may here be given for this: The strings are capable, when playing alone, of a greater variety of expression than either the wood or the brass, and they never grow tired. Blowers of wind-instruments require frequent periods of rest, but the strings are equal to the demands of an operatic act an hour and a half in length. Because the strings are the foundation of the orchestra we must study them first. The string group is often described as the "quartet." This was correct in early times when composers wrote the same part for the 'cellos and double-basses, but it is not correct now, because the strings almost invariably play in five real parts. The violins are divided into two bodies, known as first and second violins.

First violins are the sopranos of the strings, second violins the altos, violas the tenors, 'cellos the barytones, and double-basses the basses. This is not strictly true, because the compass of the viola and of the 'cello enables those instruments to sing above the violins at times. But the normal distribution of the parts of the strings is that which has been given, and this distribution is disturbed only when special effects are required, as we shall see hereafter.

THE VIOLIN

Let us begin our survey of the individual instruments with a look at the violin, the prima donna of the orchestra. The violin is both a dramatic and a colorature soprano. It can sob with the woes of an *Isolde* as eloquently as Lilli Lehmann, or it can twitter with the trills and roulades of a *Lucia* as brightly as a Melba. Its resources in the way of technical agility are great, and its powers of emotional expression are still greater. It is not necessary to expatiate upon the abilities of the violin, because it is so familiar an instrument; but it is well to note that the effect of a solo violin is very different from that of a number of violins playing together in an orchestra. A body of violins is capable of producing a vigorous, masculine,

sonorous volume of tone whose character is as different from that of a solo instrument as its amount is.

The violin has four strings, the lowest being tuned to the G below the treble clef. The other three are tuned to D, A, and E, the E being that in the uppermost space of the treble clef. The E is called the first string, and the G the fourth. The compass of the instrument as employed in the orchestra is from the low G, three and a half octaves upward, to the C in the sixth space above the staff. This compass is sometimes increased by the employment of what are called harmonics. These are strangely sweet flute-like sounds, which the Germans call the flageolet tones of the violin. They are nothing more or less than what the scientists describe as overtones, or, better, upper partials. It is a fact of acoustics that every musical tone is composed of several tones, the ear hearing plainly only that which is the fundamental sound of the series. In the case of a vibrating string the lesser tones can be utilized. Professor Zahm, in his "Sound and Music," says: "A string emitting a musical note rarely, if ever, vibrates as a whole, without, at the same time, vibrating in segments, which are aliquot parts of the whole." Violinists have discovered that by touching the

vibrating string at certain points very lightly with the fingers of the left hand, they can stop the vibrations of the fundamental tone, leaving the upper partial to be heard. These harmonics are very high in pitch and sweet in quality, and cannot be used in loud or vigorous music, but in certain kinds of passages they enable the violin to soar away into realms of ethereal beauty of tone.

The normal tone of a body of violins playing together is clear, penetrating, and rich. As Berlioz has noted in his book on orchestration, a mass of violins playing in the middle and upper registers produces the most brilliant color of the modern orchestra. The opening measures of Mendelssohn's Italian symphony, the finale of Weber's "Oberon" overture, the closing measures of the garden scene in Gounod's "Faust," or the whole of the prelude to Wagner's "Lohengrin," may be instanced as illustrations of pure violin color and power.

The prelude to "Lohengrin" also makes use of harmonics. They are heard in the peculiar, mystic, high tones at the close of the number. It should be noted here that harmonics, or upper partials, need not be used simply to increase the compass of the violin. On the contrary, they can be produced from any of the four strings. Those of the G string, for instance,

have a singularly mellow, flute-like quality. Thus, harmonics can be employed in tone-coloring, in which the resources of the modern orchestra are almost inexhaustible.

A great many special effects can be produced from violins. The manner of drawing the bow across the strings has much to do with them. For instance, bowing close to the bridge of the instrument produces a rough, metallic sound, while bowing over the finger-board evokes a soft, veiled tone. There is even a difference in the sound of a tone produced by the pushing of the bow upward and that given out when it is drawn downward. The use of the toe or the heel of the bow also makes a difference. The toe is best employed for a delicate touch, while the heel is used for short, vigorous notes. All possible gradations between a smooth, fluent cantilena and the sharpest staccato are possible to the violin, and can be employed in the orchestra with excellent effect.

Rapid alternating strokes of the bow upward and downward produce the tremolo effect, which is very common in orchestral music. Berlioz notes, with his customary accuracy in regard to instrumental effects, that the tremolo of violins expresses great agitation when played by many violins not far above the middle B flat, while a forte on the middle of the first

string is stormy and violent. Wagner's "Flying Dutchman" overture affords admirable examples of both these effects.

The saltato is sometimes employed. This is a performance of rapid successions of notes by causing the bow to jump on the strings by its own elasticity instead of drawing it smoothly. The direction *col legno*, sometimes seen in orchestra scores, means that the violinists are to use the backs of their bows instead of the hair. This produces a harsh, grotesque kind of staccato, and it is a method employed only in music with something of grim humor in it. Some of the best instances of its employment are to be found in Wagner's "Siegfried," where it is used in the music accompanying *Mime's* betrayal of his gleeful expectations of *Siegfried's* death.

Pizzicato is a term used to express the plucking of the strings with the fingers. This is a very familiar musical effect. In earlier times it was employed very little, and confined chiefly to the basses. It is very common in modern music, and sometimes whole movements are directed to be played in this manner. The familiar pizzicato movement of Delibes's "Sylvia" ballet is an excellent example.

Sordines are little contrivances of wood or brass with teeth which can be pressed down over the strings so as to deaden their vibra-

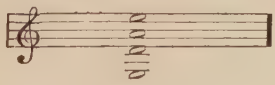
tions. You will often, if you are observant, see the players take them out of their waistcoat-pockets and place them over the strings of their instruments just in front of the bridges. These sordine, or mutes, give the tone of the instrument a veiled sound, which adds to the mournfulness of pathetic music, and to the mystery of anything weird or strange. In the "Queen Mab" scherzo of Berlioz's "Romeo et Juliette" symphony, for instance, the use of the sordines adds to the suggestion of the supernatural world, while in "Asa's Death" in Grieg's "Peer Gynt" suite they deepen the impression of crushing sorrow. For the benefit of those who read orchestral scores it must be added that the direction to use the mutes is *con sordini*, and the words *senza sordini* signify that their use is to be discontinued. The use of the bow after a pizzicato passage is directed by the words *col arco*, or simply *arco* (the bow).

Violins in the orchestra are divided into two bodies, first and second. A friend once asked me: "What is the difference between a first and a second violin?" The question amused me and I repeated it to my friend, Philip Hale, the brilliant music critic of the Boston *Journal*. He promptly answered: "There is no difference except in the price." That is quite true. Violins are all alike, but a first-violin player is some-

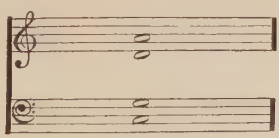
times paid more than a second. The reason for dividing the instruments into two bodies is that the middle voices of the harmony may be properly filled out. If there were no second violins, the violas, which we shall presently consider, would have to play continually in their upper register in order to fill what may be called the contralto part of the harmony. Then the 'cellos would have to be pushed up into the tenor register, and there would be a big gap between them and the low-toned double-basses. On the other hand, if the violas were kept down, there would be a gap between them and the violins. But by dividing the violins into two bodies, the second violins are available for the notes of the harmony lying between those sounded by the first violins and those given out by the violas. First and second violins can frequently play the same notes, when the harmonic support is confided to the wind-instruments, and thus a double amount of power is attained. Indeed, it is not uncommon to write a melody for all the violins, violas, and 'cellos to sing together, with wind accompaniment. First and second violins, on the other hand, are often subdivided into four or more parts. So are all the other stringed instruments. This is an effect which we shall consider more in detail when we come to the extended examination of the separate choirs.

THE VIOLA

This adorable instrument always reminds me of Shakespeare's *Viola*—"She never told her love, but let concealment, like a worm i' the bud, prey on her damask cheek." The viola speaks often enough, but no one recognizes her voice. She is unknown to the average concert-goer. Kept in the background by the position of the players, who sit behind the violins, and by the unskilful employment of the earlier composers, this beautiful and expressive member of the viol family is almost a stranger to lovers of music. The viola is nothing more or less than a larger violin with a deeper compass. The violin is tuned, as we have already seen, thus:

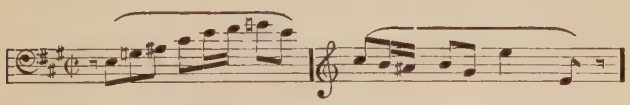


The viola has also four strings, which are tuned thus:



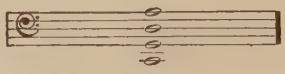
In order to avoid the inconvenience of writing the part of the viola in two clefs, the old

custom of writing it on what is known as the alto clef is continued. The peculiarities of clefs will be explained in a separate chapter. The viola is both a tenor and a contralto, though it is usually employed in modern scores to discharge the duties of a tenor. The early composers knew so little about its expressive power that they frequently used it simply to reinforce the basses. The most recent writers have gone to the other extreme. They have been so delighted with the individuality of the viola's tone that they have shown a tendency to overwork it. The lowest register of the viola has a peculiarly sepulchral tone, which gives it a dark and threatening character, admirably adapted to the demands of tragic music. In its middle register the viola sings with a peculiar pathos which cannot be imitated by any other instrument playing in the same region of pitch, and even in the higher parts of its scale the viola maintains its individuality by a penetrating sweetness and gentleness of tone. Nevertheless, it blends well with other stringed instruments. If a composer desires to write a long scale, exceeding the downward range of violins, he can pass from violins to violas, and so to 'cellos, without any abrupt change of tonal quality. Again, violas can be used to reinforce other stringed instruments, as in the beginning

of the *andante con moto* of Beethoven's Fifth Symphony, where they play the melody in unison with the 'cellos. Meyerbeer, Berlioz, and Wagner have made excellent use of the characteristic qualities of the viola. The first named gives a good example of his style of treatment in the viola accompaniment to *Raoul's* romance, "Plus blanche que la blanche hermine," in Act I. of "Les Huguenots." Berlioz employs a solo viola in his "Harold in Italy" symphony to represent Byron's melancholy wanderer. Wagner takes advantage of the peculiar tone-color of the instrument in many places in his scores. A familiar example is that which begins the bacchanalian passage in the "Tannhäuser" overture:

All that has been said about the methods of bowing, tremolo, pizzicato, harmonics, sordines, etc., applies to the viola as well as to the violin.

THE VIOLONCELLO

This instrument is so well known that it will not be necessary to say much about it. Its

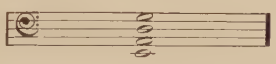
tone and its various effects are familiar to all concert-goers. The 'cello is tuned precisely as the viola is, but an octave lower:

The compass usually employed in the orchestra is three and one-half octaves from the low C to the G just above the treble staff. This compass may be increased further by the employment of harmonics. Students of scores will find that three different clefs are used for 'cello music, as explained in the account of clefs.

All that has been said about playing the violin applies also to the 'cello, though, of course, in orchestral music the 'cello is not expected to display so much agility as the violin. It is heard to the best advantage in broad and fluent melody. As Berlioz justly says: "Nothing is more voluptuously melancholy or more suited to the utterance of tender, languishing themes than a mass of violoncellos playing in unison on their first strings." He might have added that nothing is more expressive of dignity without passion than the lower tones of the 'cello when uttered by several instruments at once. Owing to its great compass the 'cello can be used as the bass of the string

quartet, as a solo instrument, or as the singer of the melody with an accompaniment by the other strings.

THE DOUBLE-BASS

The irreverent frequently call the double-bass the "bull fiddle." It is the foundation of the string choir and the fundamental bass of the whole orchestra. It is tuned thus:



It must be borne in mind, however, that the notes sound an octave lower than written. The instrument is called the double-bass because it was used in early times to double the bass part played by the 'cello. It is only since the beginning of the nineteenth century that it has generally been given an independent bass part. Beethoven extended its powers immensely and revealed capacities which earlier composers did not suspect the instrument of possessing. Indeed, some of Beethoven's contemporaries looked askance at his innovations. Weber wrote an article on the great man's Fourth Symphony. In it he depicted himself as hearing in a dream the comments of the in-

struments of the orchestra. The contra-bass (double-bass) says:

"I have just come from the rehearsal of a symphony by one of our newest composers; and though, as you know, I have a tolerably strong constitution, I could only just hold out, and five minutes more would have shattered my frame and burst the sinews of my life. I have been made to caper about like a wild goat, and to turn myself into a mere fiddle to execute the no-ideas of Mr. Composer."

The time had not yet come for the famous recitative passage of the basses in the Ninth Symphony. The same methods of bowing, etc., as are applied to the violin are applied to the double-bass, but without any attempt at great agility. Sordines, or mutes, are not used, because an effective mute for a double-bass would weigh about two pounds and would be very inconvenient to carry in the pocket. Harmonics can be produced from the double-bass, but they are strident and loud and have no musical utility.

II

Wind-Instruments of Wood

THE FLUTE

NEXT in importance to the strings is the wood-wind, which is divided into three families—flutes, oboes, and clarinets. To the first family belong the piccolo and the flute; to the second the oboe, English horn, and bassoon, and to the third the clarinet and bass clarinet. In the modern orchestra, flutes, clarinets, oboes, and bassoons are usually employed in pairs, while there is, if needed, one piccolo, one English horn, and one bass clarinet. The flute is the most agile of the wind-instruments, and is employed very freely in the orchestra. Its compass is three octaves upward from the C below the treble clef, but the two uppermost notes are seldom used. The tone is soft and sweet in the medium register, clear and penetrating in the upper, and singularly characteristic in the lower. Rapid passages are readily executed on the flute, but the instrument's pow-

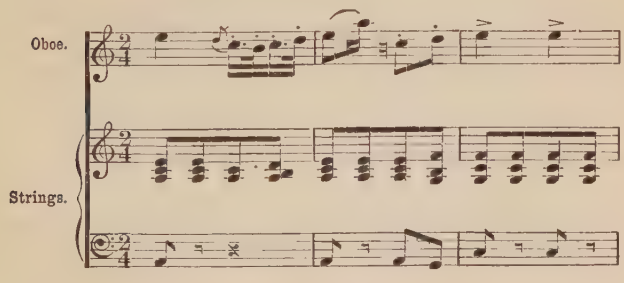
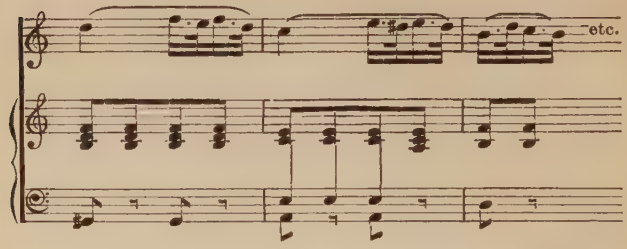
ers of expression are limited, owing partly to its tone-quality and partly to the impossibility of giving a wide crescendo or diminuendo to any passage played upon it.

Nevertheless, it can be employed expressively when used with judgment. Berlioz calls attention to Gluck's use of it in his "Orfeo" in the scene in the Elysian fields, where it voices the humility and resignation of the bereaved husband. In the upper register rapid sequences for the flute have an air of gayety. Well-known passages which illustrate this are that near the close of the "Leonora" overture No. 3, and that near the close of the finale of the "Eroica" symphony. The piccolo, or octave-flute, is simply a small, shrill-voiced flute, sounding an octave higher than the ordinary instrument. The sounds in its second octave are well adapted to pieces of a joyous character, while its upper register is useful for violent effects, such as a storm or a scene in the infernal regions. In grotesque and supernatural scenes it is also often employed with good results.

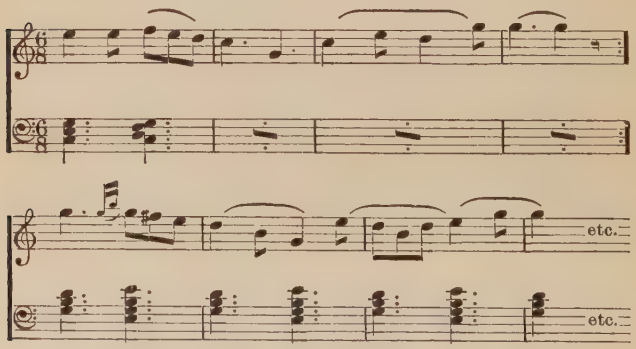
THE OBOE

The oboe is a reed instrument with a peculiar pastoral tone, which, when once recognized, can never again be mistaken for that of another

instrument. It is not possible to describe this tone, beyond saying that the average hearer thinks of it as the tone of a shepherd's pipe. The instrument is so well suited to pastoral music that the principal melody is almost always given to it in passages having such a character. Rapid passages, except in rare instances, are not suited to the utterance of the oboe, though when it joins with the whole mass of instruments in a tutti, anything that is not impossible may be written for it. But it is essentially a lyric instrument of tender expression, and it is seldom called upon for either gayety or tragedy. Berlioz says: "Candor, artless grace, soft joy, or the grief of a fragile being, suits the oboe's accents. It expresses them admirably in its cantabile." An excellent example of the oboe's quality as a tender lyric singer is the opening of the slow movement of Schubert's symphony in C:



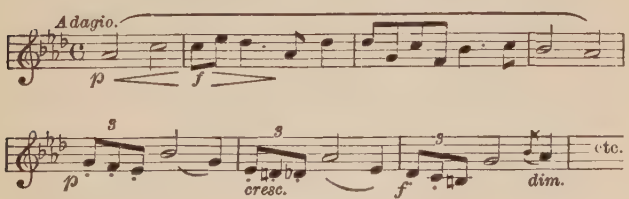
Its pastoral character is illustrated by hundreds of familiar passages. Perhaps none is more familiar than this from the first scene of Gounod's "Faust."

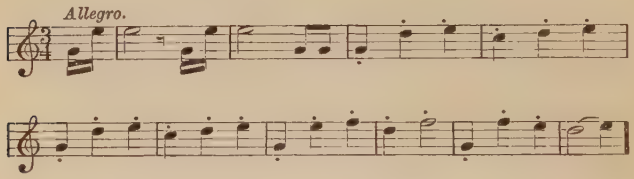


To the oboe belongs the duty of sounding the A to which the whole orchestra tunes. This privilege dates from the time of Handel, when it was the principal wind-instrument employed in the band.

THE ENGLISH HORN

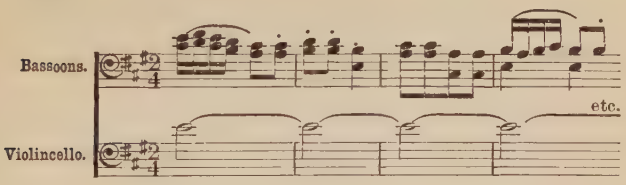
The English horn is not, as its name seems to imply, an instrument of brass, but of wood. It is, in fact, an alto oboe. Its compass is from the E below the treble clef to the F on the fifth line. This carries it five tones below the oboe. Its tone is similar to that of the oboe, but is heavier and has a dryer quality. Its character is less feminine, more sombre, and more pathetic. Yet it is not incapable of joyous expression, if the expression is not strained by the context. In all the range of music there are no such examples of the eloquence of the English horn as in the works of Wagner, who made it speak with a human voice. The finest instances of its powers are to be found in his later dramas, and perhaps the most familiar are in "Tristan und Isolde." The English horn is the instrument which imitates the shepherd's pipe in the melancholy wail of Act III., played while *Tristan* is waiting for news of the ship.



When the ship is sighted by the herdsman, his pipe (still the English horn) bursts into this pæan of joy:

THE BASSOON

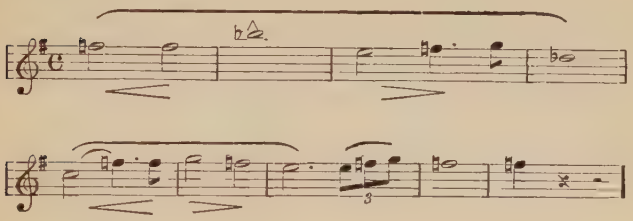
The bassoon is the bass of the oboe, and it occupies among the wood-wind instruments a position similar to that of the 'cello among the strings. Its upper tones resemble somewhat those of the English horn, while its lower tones are deep and hoarse. Its extreme compass is from the B flat below the bass clef to the F at the top of the treble, but the last four notes are uncertain and of unnatural quality. Music for the bassoon, like that for the 'cello, is written on three clefs—bass, tenor, and treble. Bassoons are employed in pairs in the orchestra. They are used either to fill out the harmonies, to strengthen the bass, or as solo instruments.

The bassoon is capable of a great variety of effects. Its upper register has a pastoral qual-

ity, combined with a certain plaintiveness, which makes it suitable to the utterance of gentle grief or melancholy. Composers have frequently availed themselves of the humorous effects to be obtained by making the bassoon play music which ill comports with the quality of its tone. The effect is really funny, though the fun arises, not from the inherent humor of the instrument, but from the incongruity of the singer and the song. The most familiar example of this kind of fun is in the clown's march in Mendelssohn's "Midsummer Night's Dream" music:

There is also a contra-bass bassoon, which sounds an octave lower than the ordinary bassoon. The reader will find that in orchestra scores the bassoons are usually designated by their Italian title, fagotti. This name is applied to the instrument because it resembles two sticks bound together, as in a bundle of fagots.

THE CLARINET

The clarinet is a wind-instrument of wood with a very mellow and beautiful tone. It differs from the oboe chiefly in the construction of its mouth-piece, which contains the sound-producing mechanism. The instruments of the oboe family have mouth-pieces with two vibrating reeds; those of the clarinet family have only one reed. This accounts chiefly for the difference in the character of the tone. The compass of the clarinet is from the E below the treble clef three octaves and a half upward. The notes of the uppermost octave are shrill and are seldom used. They are employed occasionally when a screaming effect is desired. Clarinets are used in pairs in the orchestra, sometimes to fill out harmonies, and frequently for solo effects. There is hardly anything which cannot be done with a clarinet, for the instrument is capable of great agility and brilliancy, and at the same time is the most expressive of all the wind-instruments. It can be played pianissimo or fortissimo through most of its compass, and the most beautiful crescendo and diminuendo effects can be obtained. There is no more familiar example of the high expressiveness of the clarinet than that found in the

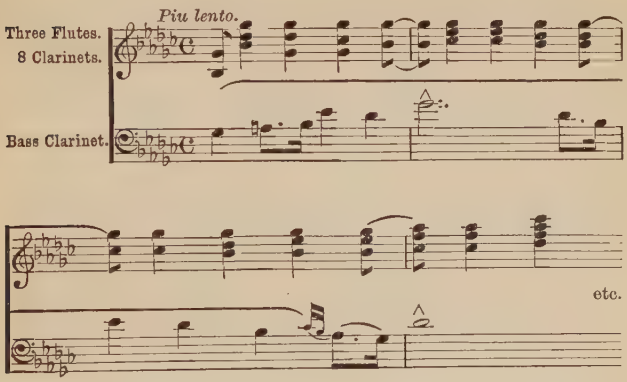
overture to "Tannhäuser," where the clarinet intones the pleading passage afterward sung in the first scene by *Venus:*

The reader will find that in scores the clarinet part is usually written in some other key than that of the composition. This is because three kinds of clarinet are employed, clarinets in A, B flat, and C. A clarinet in B flat means one whose pitch is a whole tone below the standard, so that when one plays the scale of C natural on it he gets the sounds of the scale of B flat, just as he would from a piano tuned a whole tone too low. A clarinet in A is a tone and a half below pitch in the scale of C. One in C produces the scale of C when played in C. The reason for using different kinds of clarinets is that it is difficult to play the instrument in remote keys. By using an A clarinet for keys having sharps and a B flat clarinet for keys having flats, much of the difficulty is obviated. A

clarinet in A is producing the sounds of the key of three sharps when it is playing in C. To get the sounds of the key of six sharps, it is necessary only to write for the A clarinet in three sharps. Similarly, to get the sounds of the key of five flats one needs only to write in three flats for a clarinet in B flat. The kind of clarinet to be used is designated in the score. Instruments treated in this manner are called transposing instruments. (See Chapter V.)

THE BASS CLARINET

The bass clarinet is a clarinet whose compass extends an octave below that of the B flat clarinet. It is a long instrument with a curved bell at the lower end, so that it looks like an old-fashioned Dutch pipe. Bass clarinets in B flat and A are employed, and the music is usually written on the treble clef, thus transposing an octave below. Wagner uses the bass clef, which is more convenient for the student of his scores than for the performer. The tone of the lower register of the bass clarinet is sonorous and rich, and affords a fine bass for wood-wind passages.

As a solo instrument the bass clarinet is admirable in its dignity. The instrument is used singly, not in pairs. As a fine example

of the effect of the bass clarinet, the music of *Elizabeth's* final exit in Act III. of "Tannhäuser" may be commended.

III

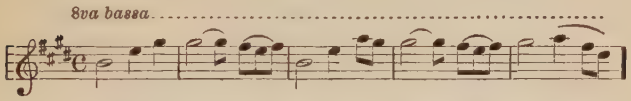
Wind-Instruments of Brass

THE HORN

THE brass choir is composed of horns, trumpets, and trombones, with the addition in most modern scores of a contra-bass tuba. Wagner has used also bass trumpets and tenor tubas to enrich the color of this part of his orchestra. The horn, or French horn, as it is often called, is the old hunting horn adapted to orchestral purposes. It is an extremely valuable instrument, because it has a most noble and expressive tone, which makes it very interesting as a solo voice, and equally because it blends admirably with either strings or wood, as well as with brass. In the older compositions the reader will find that two horns were used, but it is customary with modern composers to employ four, thus making a full four-part harmony possible. Wagner generally doubles his horn parts, requiring eight instruments.

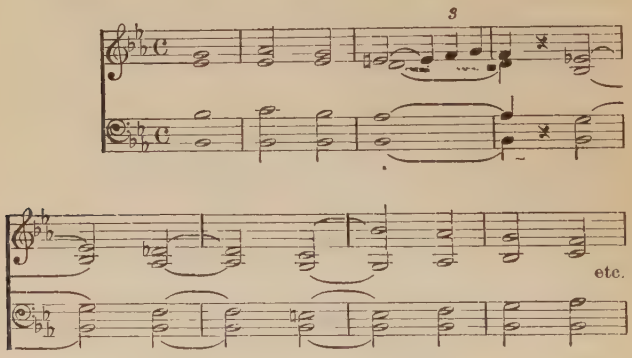
It was impossible in earlier times to play in

all keys on any one horn, and so horns in various keys had to be used. The reader will find that many scores call for horns in D, in E flat, in B flat, etc. Players now use almost exclusively the horn in F, with valves, upon which it is possible to play in all keys. It is customary with many composers, however, to write horn parts in various keys, and the players have to transpose them. As no opera is more familiar than "Faust," the reader may readily identify the horn as a solo instrument in the first act when *Mephistopheles* shows *Faust* the vision of *Marguerite*.



In Wagner's "Siegfried" the horn plays all the passages which the young hero is supposed to intone on his hunting horn. The quartet of horns employed in the modern orchestra is frequently heard alone, and the effect of this full harmony of mellow brass is incomparably fine. Such effects are heard in the hunting fanfare which precedes the entrance of the *Landgrave* and his party in Act I. of "Tannhäuser," and in the echoing through the woods of the departing hunt in the beginning of Act II. of "Tristan und Isolde." It must not be supposed, how-

ever, that horn quartets are used only for hunting effects. One has only to recall the beautiful passage in Saint-Säen's " Phäeton."



Stopped tones are frequently given to the horns. These are produced by inserting the hand in the bell of the instrument, where it has an effect not unlike that of a sordine on a violin-string. The quality of stopped tones is nasal and stertorous. They are used with much significance in dramatic music.

THE TRUMPET

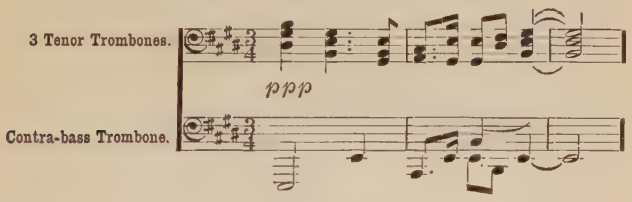
This fine instrument, the soprano of the brass choir, is too often replaced by the cornet. Indeed, in the United States I have heard trumpets only in the Boston Symphony Orchestra

and Walter Damrosch's orchestra. The trumpet has a full, round, brilliant tone, for which that of the blatant and brassy cornet is not a good substitute. But it is much easier to get good cornet-players than good trumpeters, so the cornet is quite common. The pealing, militant character of the trumpet is always associated in the mind with that of the army bugle, which it closely resembles. The trumpets are usually employed in chords written for the brass, or in the big mass effects of the orchestra. They are seldom called upon to intone a melody except in passages in which the brass plays alone, or when a very brilliant and forcible orchestration is used. The instrument is so familiar that no illustration is necessary. Trumpets in various keys were formerly always employed, but it is now customary to use chiefly the F trumpet, with valves. Cornets employed in the orchestra are in A and B flat. There is a high cornet in E flat, but it is used only in military bands. Stopped tones are easily produced from the cornet or trumpet, and are often used for comic effects. They sound much like the voice of a person singing in a falsetto voice through his nose. Trumpets and cornets are generally used in pairs in the orchestra.

THE TROMBONE

The trombone is one of the noblest of all orchestral instruments. When it sounds ignoble, it is either because its part is not well written or because it is badly played. In respect of register there are three principal kinds of trombones—alto, tenor, and bass. The alto has a compass extending from A at the bottom of the bass clef to the E flat in the top space of the treble clef. The tenor ranges from E below the bass clef to the B flat in the middle of the treble clef, and this is the instrument most frequently employed. The bass trombone's register runs from B below the bass to the F in the first space of the treble clef. The alto trombone is in E flat, the tenor in B flat, and the bass in F. There is also a contra-bass trombone in B flat, sounding an octave lower than the tenor trombone. It is very fatiguing to play, and is usually replaced by the tuba, whose tone is of a considerably different character. Although all these trombones stand in keys other than C, they are not treated as transposing, but are written in the key of the composition.

The tone of the trombone is grave and majestic, but it may be made to rage hoarsely. In

all solemn or broadly dignified music trombones play a conspicuous part. It is customary to write in three parts for these instruments, but when necessary they may be made to play in unison, as in the proclamation of the pilgrims' chorus in the overture to "Tannhäuser," or the curse motive in various parts of the Nibelung series. A fine example of the employment of trombones in several parts is to be found in the first act of "Die Walküre" on the first appearance of the "Walhalla" motive.

THE TUBA

The tuba is a deep-toned brass instrument of double-bass quality. It is, in fact, the double-bass of the brass choir. Its quality of tone is noble and blends well with that of trombones. The instrument usually employed in the modern orchestra is the bass tuba in B flat. Wagner employs tenor tubas in the funeral march of the "Götterdämmerung" in order to get a generally consistent sombre color in the brass. He

uses in other places both bass and contra-bass tubas, but his writing for these instruments cannot be regarded as invariably felicitous.

The tuba is really a member of the large family of Saxhorns, of which there are six principal types, all in E flat or B flat. These are the sopranino, or piccolo Saxhorn in E flat (A below treble to B flat above), soprano Saxhorn in B flat (German flügelhorn—E below treble to B flat above), alto in E flat (bass A to E flat in fourth space of treble), tenor in B flat (E below bass to B flat treble), bass in B flat, called in Germany bass tuba, and in England euphonium (B flat below bass to F above it), bass in E flat (same compass less one upper note), and contra-bass in B flat (E flat an octave below the bass to F on the third line). These instruments belong primarily to the military band, but an orchestral composer may employ any of them that suit his purpose.

In some older scores the music-lover will find instead of the tuba the ophicleide, which is the bass of the keyed bugle family. Its coarse and blatant tone is happily replaced by that of the tuba.

IV

Other Instruments

THE TYMPANI

THE tympani, or kettle-drums, belong to the department of instruments of percussion. They are the only drums which can be tuned to sound certain notes. The other instruments of percussion need not be described until the department is discussed as a whole. The older composers employed only two kettle-drums. The modern writers often use three and sometimes four. There are low and high kettle-drums. The low drum can be tuned to any note from F below the bass clef to C in the second space, and the high drum from B flat on the second line to F on the fourth. The early composers used kettle-drums almost invariably with the trumpets, and found no better employment for them than the accentuation of rhythm and changes of harmony. Beethoven, who was one of the keenest of all composers in his appreciation of the individuality of instruments, saw

that the kettle-drums could be used for special effects.

The early composers always tuned them to the tonic key and its dominant. Beethoven, in the scherzo of the Ninth Symphony, tuned them in octaves and produced a striking effect. Again in the slow movement of the same symphony he made the two drums play simultaneously on two notes of a chord. This also was novel. In the andante of his First Symphony he had already made the tympani play the bass to a melody of violins and flutes, and in the Fourth Symphony the tympani take their turn with the other instruments in playing the theme of two notes often repeated. The solo effects of the tympani in the scherzo of the Fifth Symphony and in the opening of the violin concerto are well known. Beethoven thus paved the way for subsequent composers to make a wide and varied use not only of the tympani but of other percussive instruments.

Other instruments of percussion employed in the orchestra are the military snare drum, bass drum, cymbals, triangle, tambourine, castanets, the carillon (a set of steel bars which produce sounds like those of small bells), the xylophone, large bells (or heavy steel tubes to imitate them), and the gong.

THE HARP

The reader will look in vain for the harp in the older symphonic scores. It was in its early employment wholly an instrument of the theatre. Although it found its way into the orchestra early, it was not employed as a genuine orchestral instrument. Up to the beginning of the present century, as Gevaert has clearly pointed out, composers used it for the sake of its historical character. Thus Handel introduced it in the first version of his "Esther" (1720), Gluck in his "Orfeo" (1762), and Beethoven in his "Prometheus" ballet (1799). In Gluck's "Orfeo," for example, the harp is heard only when *Orpheus* is supposed to play on the instrument carried by him. In this same manner Wagner employs the harp in "Tannhäuser." It was employed in a similar manner in the early part of the present century by composers for the theatre, chiefly in France. Biblical and classical subjects, in which the harps of the daughters of Israel or the lyres of Greece and Rome might be heard, naturally suggested the use of the harp, and thus it was employed by Méhul in his "Joseph" (1809), Spontini in "La Vestale" (1807), and Rossini in "Moïse" (1827). Again, scenes in Scotland

or Ireland required the local color of the gleeman's harp, and for this purpose it was employed by Méhul in his "Uthal" (1803), Lesueur in "Les Bardes" (1807), and Catel in "Wallace" (1817).

The perfection of the pedal mechanism by Sebastian Erard in 1810 led to a much wider use of the harp. Meyerbeer and Wagner began to use it extensively in their operas, and Berlioz introduced it into symphonic music of the romantic school.

The harp is provided with seven pedals, operated by the player's feet. By means of these pedals the tension of the strings can be instantly altered, thus changing the pitch of the scale, or, in other words, putting the harp into another key. It is this mechanism which enables the harpist of to-day to play in all keys, while in earlier times only a few were practicable.

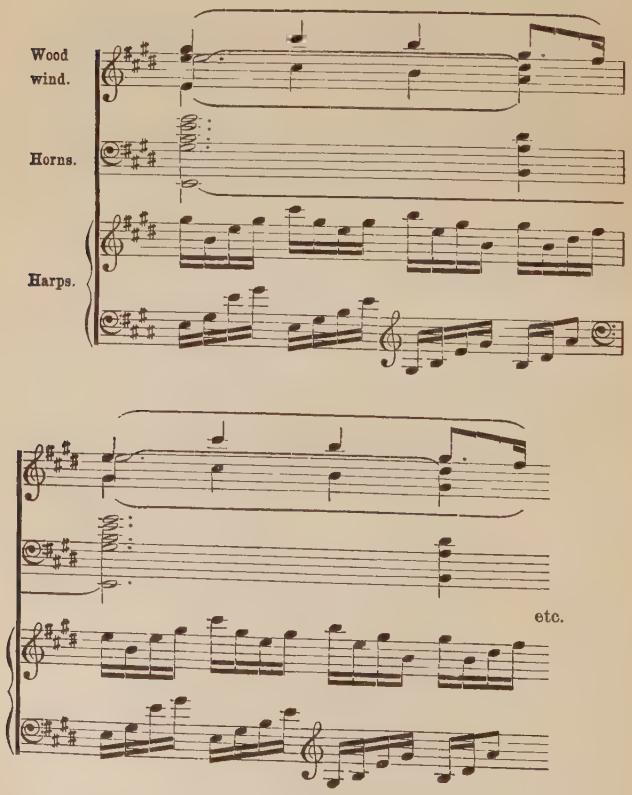
The reader of orchestra scores will find that harp parts are written on two staves, like piano music, and placed in the score just above the parts of the string quintet. The harp is a non-transposing instrument and its music is written as it sounds. Sometimes, however, in remote keys composers remove some of a harp-player's difficulties by changing the key signature. For instance, certain kinds of passages,

if written in the key of B natural, are very difficult for the harp, whereas if written in C flat (which sounds precisely the same) they become easy. This is because the Erard system of tuning makes C flat the fundamental key of the harp.

The instrument is much used in our day in orchestral music, as well as in the opera. Its treatment is usually either in broad chords, as in the air "Roi du ciel" in Meyerbeer's "Le Prophète," or in running arpeggios, as in "Anges purs et radieux" in "Faust." Glissando effects—smooth-running passages produced by sliding the hands rapidly over the strings without stopping to pluck them—are often used in modern music, as in the orchestral arrangements of Liszt's Hungarian rhapsodies. Harmonics can be produced on the harp. They sound like the faint tinkle of a muffled glass bell, and are very pretty when properly applied. A familiar example is to be found in the waltz of the sylphs in the ballet music of Berlioz's "Damnation of Faust."

Wagner has used the harp very freely in his music dramas. Sometimes he employs it historically, sometimes for the sake of its luxuriant tone in the accompaniment of lyric song, and again with a remarkable insight into its power of combination with other instruments in de-

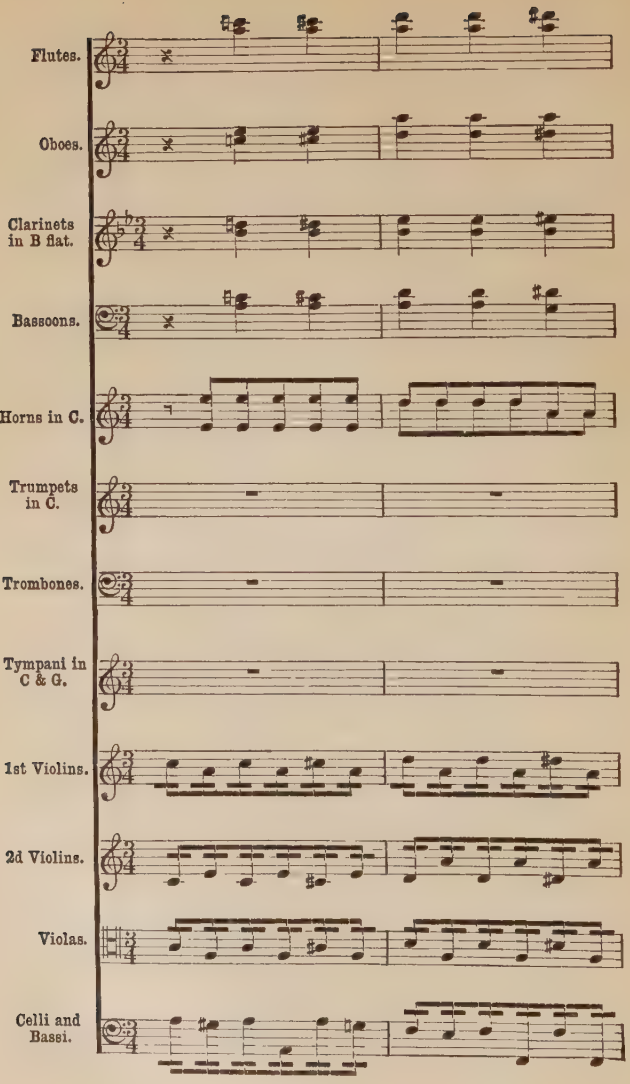
scriptive music. In this latter manner it is superbly used in the magic fire-music of "Die Walküre:"

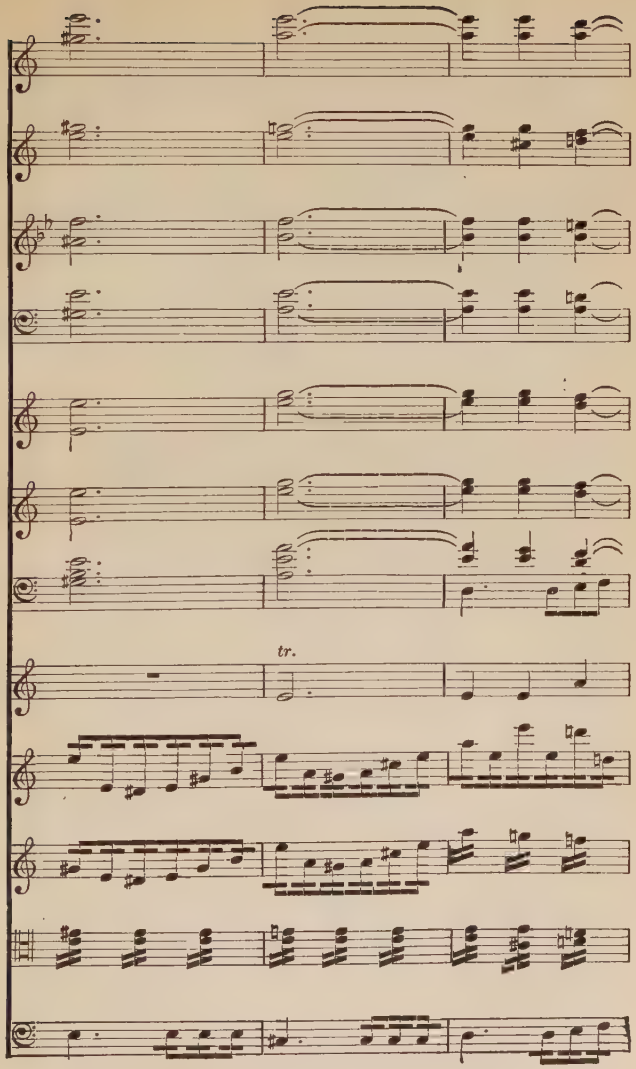


V

The Orchestral Score

THE printed form of an orchestral composition, or one for voices and orchestra, is called a score. (German, Partitur.) In it are comprised the parts to be played by all the instruments. It is read across the page precisely as a piece of piano music is, with the important difference that while in a piano piece there are only two staves—one for the treble and one for the bass—in an orchestral score there are from sixteen to twenty-four, according to the number of the parts. The name of the instrument is printed at the beginning of its part and also the key in which it stands, if it is a transposing instrument. The customary order of the instruments from top to bottom of the page is as follows: Flutes, oboes, clarinets, bassoons, horns, trumpets, trombones, tuba, tympani, and other instruments of percussion, harps, violins, violas, 'cellos, and double-basses. This order is sometimes changed for the sake of convenience. If there are voices, as in an opera or oratorio, they will be found in the older scores between


Flutes.
Oboes.
Clarinets in B flat.
Bassoons.
Horns in C.
Trumpets in C.
Trombones.
Tympani in C & G.
1st Violins.
2d Violins.
Violas.
Celli and Bassi.


tr.

the viola and 'cello parts. The more modern custom is to put them above the first violins, so that the parts of the string choir are not separated. In a concerto the solo instrument is similarly placed. The names of the instruments of the score are usually given in Italian, but sometimes in German. The following list gives the names of the instruments in English, Italian, German, and French, with the plurals where needed:

	Italian.	German.	French.
Flute	Flautŏ(i)	Flöte(n)	Flute.
Oboe	Oboe(i)	Hoboe(n)	Hautbois.
English Horn	Corno Inglese	Englische Horn	Cor Anglais.
Clarinet	Clarinettŏ(i)	Clarinette(n)	Clarinette.
Bassoon	Fagottŏ(i)	Fagott(e)	Basson.
Horn	Cornŏ(i)	Horn(er)	Cor.
Trumpet	Tromba(e)	Trompete(n)	Trompette.
Cornet	Cornettô(i)	Cornet(te)	Cornette à pistons.
Trombone	Trombonó(i)	Posaune(n)	Trombone.
Tuba	Tuba	Tuba	Tuba.
Bass Drum	Gran Cassa	Grosse Trommel	Grosse Caisse.
Cymbals	Piatti	Becken	Cymbales.
Kettle-drums	Timpani	Pauken	Timbales.
Harp	Arpa	Harfe	Harpe.
Violin	Violino	Geige	Violone.
Viola	Viola	Bratsche	Alto.
Violoncello	Violoncello	Violoncell	Violoncelle.
Bass	Basso	Bass	Contrebasse.

In German scores the Italian names are often used. Sometimes each instrument has a separate staff, but more frequently a pair of instruments, as two flutes, or two oboes, is written on one staff. In such cases the tails of the

notes for the upper instrument are turned up and of those for the lower down. If there are two sets of tails, one up and one down, to one set of notes, it indicates that two instruments are to play the same passage. In the case of four horns, two staves are used, the upper for the first and second and the lower for the third and fourth. In old scores the reader will find many different orders of placing the instruments on the page. That which I have given is the present method.

The reader will find many directions and abbreviations in scores not used in piano music. The meaning of any of these can be ascertained by consulting a dictionary of music. One or two may be explained here. The word "divisi" written over a part in double notes (or more) means that one instrument is to play the upper line and another the lower. First violins are thus sometimes subdivided, and so are other stringed instruments. The words "A due" are used as a direction for all to play together again. The letters A, B, C, etc., often seen at the tops and bottoms of pages, are for the convenience of conductors in rehearsing.

"If you please, gentlemen, let us go back to four bars before the letter G," or something of that kind, is a familiar remark at orchestra rehearsals.

The reader will find that in many scores space is saved by omitting from some pages the staves of those instruments which have nothing on those pages. Usually when this is done the names of the instruments which are playing are indicated by abbreviations placed just above the staves, as "Fl., Cl., Fg.," etc. The full names of the instruments employed in any movement are given only at the beginning, and the reader of scores should note how many staves are employed. Sometimes the flutes are written on two staves, sometimes on one. The same is true of the other wind-instruments. Usually the wood-choir staves are bound together by a continuous double bar at the beginning of each page, and sometimes the horns have one double bar. The score-reader will soon become familiar with the various arrangements. One who loves orchestral music and wishes to understand how its effects are produced should study scores. Study your score first at home and try to imagine how it ought to sound. Then follow the performance with it and note what combinations of instruments produce particular effects. After a time you will find that your understanding of the orchestra has greatly increased, and you will get new enjoyment from the performance of symphonies and overtures.

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ARTHUR NIKISCH.

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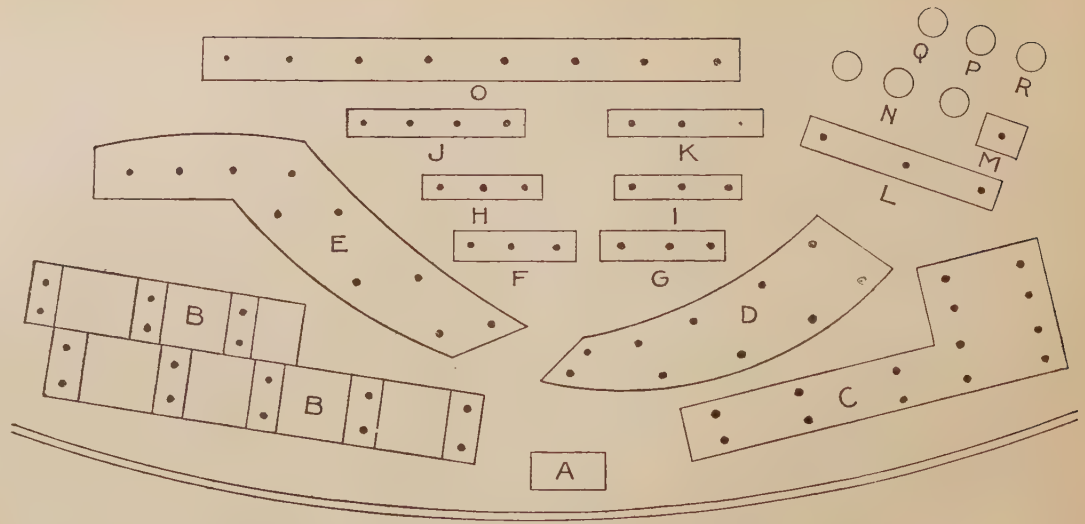
The conventional seating-plan of the orchestra will help the reader to familiarize himself with the instruments. In concerts the stringed instruments are always placed at the front of the stage, with the wind-instruments behind them, in order that the tone of the strings may come out fully and without obstruction. The first violins are always on the left of the audience, and second violins on the right. Violas are usually placed immediately behind the second violins, though some conductors put them behind the first. The 'cellos are arranged usually on the side opposite the violas, and double-basses are placed at the sides or the back, according to the conductor's idea. The wood occupies the middle of the stage, and the brass and instruments of percussion are at the rear. The diagram on the next page shows the seating plan of the Boston Symphony Orchestra.

Amateurs will find that they must extend their musical knowledge a little, if they desire to read orchestra scores. Persons who have studied only piano playing are nonplussed when they find themselves in the presence of transposing instruments and other clefs than those known as the treble and the bass. I have already briefly explained the peculiarity of what are called transposing instruments, but it will be well to give the reader some further



A—Conductor.
B—First Violins.
C—Second Violins.
D—Violas.
E—Violoncellos.
O—Double Basses.

F—Flutes.
G—Oboes and English Horn.
H—Clarinets.
I—Bassoons.
J—Horns.
K—Trumpets.

L—Trombones.
M—Tuba.
N—Tympani.
P—Triangle.
Q—Bass Drum.
R—Bells, etc.

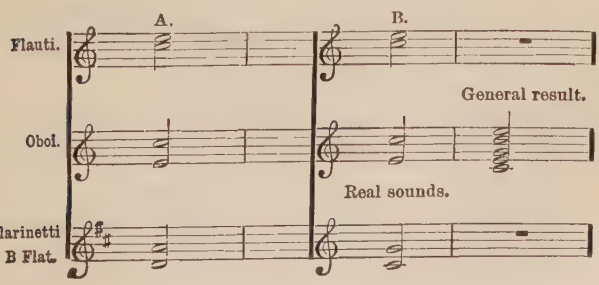
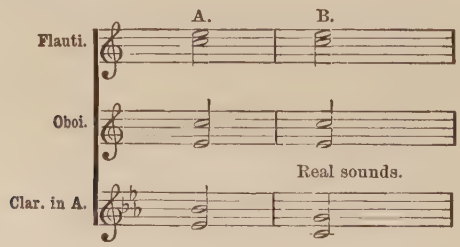
SEATING PLAN OF THE BOSTON SYMPHONY ORCHESTRA.

help in dealing with them in reading scores. A question which I have frequently heard is, "Why don't they make all instruments in C?" The answer to this question is that there could only be one reason for doing so, namely, to make it easy for amateurs to read scores. There are many more substantial reasons for making instruments in various keys. For instance, brass instruments produce most easily and with the finest tone and richest sonority their natural notes—those notes which are produced without any aid from valves or pistons' as the notes of a cavalry bugle. If a composer in writing a brilliant march in B natural, a bright and incisive key for the strings, wishes to introduce trumpets, he can make most effective use of those in B natural. But it is not possible always to have clarinets, trumpets, and horns in every key ready for instant use, so custom and experience have induced musicians to make a judicious selection. Clarinets in A and B flat are now used far more than those in C. As Gevaert says: "The choice among the three clarinets is not always made from the simple consideration of facility; often it is guided by the character of the tone peculiar to each. The clarinet in C has a timbre brilliant almost to rudeness." He further notes that it is therefore used by the classic composers

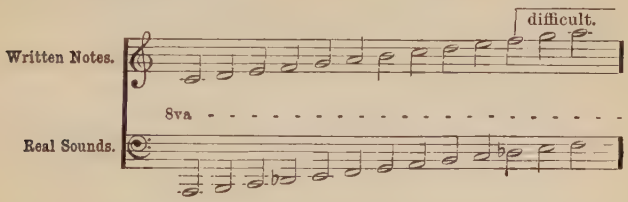
mostly in brilliant movements in the simple diatonic scales. The clarinet in B flat or that in A may be chosen for reasons of a like nature. The reader, however, will probably be more interested in knowing how he is to read clarinet parts. If they are in C, he will have no trouble, because there will be no transposition. A clarinet in B flat playing music written in C, sounds one tone lower than that scale. Hence the key of C is used for a clarinet in B flat only when the violins are playing in B flat.

In other words, every sound which issues from a B flat clarinet is one whole tone lower than that written in the score. If you write C, the instrument sounds B flat. If you wish the instrument to sound C, you must write D. If you wish it to sound F sharp, you must write G sharp. If you wish it to sound E natural, you must write F sharp or G flat.

The composer has the choice of two methods of writing his clarinet part. He may write always without any key signature and mark all flats and sharps as accidentals, or he may use a key signature. Custom has sanctioned the latter method, which is the more rational. I have just said that every tone which issues from a B flat clarinet is a whole interval below the written character. Therefore, all music for a B flat clarinet must be written one interval

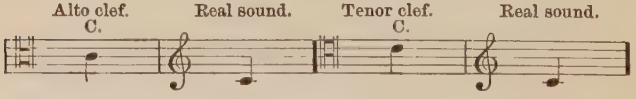
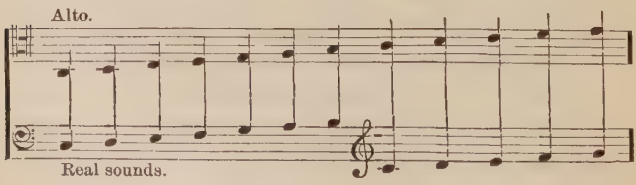
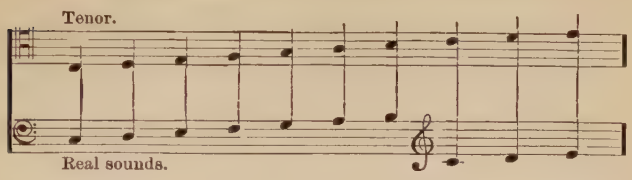
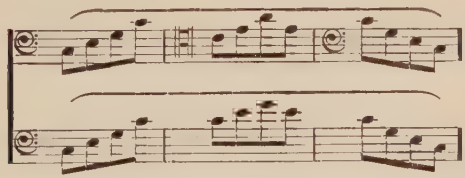
higher than it is intended to sound, and this, the reader will see, simply results in transposing a B flat clarinet part into a key one tone higher than that of the composition. For a composition in C write for B flat clarinets in the key of D. For one in D write for B flat clarinets in E. For one in E flat write for B flat clarinets in F. There is another simple way of looking at this matter. Clarinets in B flat have already two flats in their open scale. If you want them to play in C, you must contradict these two flats by two sharps, and two sharps are the signature of the key of D. Hence, write in D for B flat clarinets to play in C. In reading a score all that the amateur needs to do is to remember that every note written for the B flat clarinet sounds one tone lower than written. Thus the chord of C for two flutes, two oboes, and two clarinets might be written as at A so as to sound as at B.

In the case of clarinets in A the same principles apply. The clarinet in A sounds A when C is written, and it sounds the entire scale of A when the scale of C is written. As C is one tone and a half above A, it follows that notes for the A clarinet are always written a tone and a half higher than the sounds to be produced, and the score-reader must conceive the A clarinet parts as sounding that much lower than they are written. Thus, to get C out of an A clarinet, you must write E flat, and to make an A clarinet play in unison with flutes in the key of C, you must write in E flat for the clarinet. The chord just written would have to be rewritten thus:

One of the peculiarities of orchestra scores is that music for horns and trumpets is always written without any key signature—that is, just as if it were in C major—and all the sharps and flats are put in as accidentals. This makes difficult reading at times for an amateur. In

order to aid the music-lover I give herewith the written notes and the corresponding real sounds of the horn in F, which is the most frequently used. The same table will answer for the trumpet in F.



The rules of transposition given above apply to all music for transposing instruments. A tuba in E flat, for instance, is one which sounds E flat when the composer writes C. Persons accustomed to sight-reading with a "movable Do" have very little trouble in the study of orchestra scores, and I earnestly advise all who wish to read scores to study sight-reading.

Next comes the matter of clefs. As I have stated, it is customary to write the viola part on the alto clef. When a bassoon or a 'cello runs up so high that it is inconvenient to employ the bass clef, the tenor clef is used, and if it goes still higher, the treble clef may be introduced. These various clefs are troublesome to the amateur because he is familiar only with the treble and bass clefs. The treble clef is

known also as the G clef; because the character 𝄞 is placed upon the second line to indicate that the treble G is there located. A clef sign simply fixes the place of some note, and the others are located accordingly. The bass clef is also called the F clef, because the character 𝄢 is placed so as to indicate that F is on the fourth line. Now in the alto and tenor clefs the character 𝄡 is used, and its purpose is to locate the note C. In the alto clef it is on the third line, where B is in the treble clef. In the tenor clef it is on the fourth line, where D is in the treble clef. The question which will arise in the amateur's mind is this: Which C is it that is thus located? The answer is simple and easily remembered. It is best expressed by the following illustration:

Here are two scales, one alto and one tenor, with the real sounds.

It will be seen from these illustrations that the C located by the clef sign in the alto on the third line and the tenor clef on the fourth line is the one situated on the first leger line below the staff in the treble clef. Having this fact in mind, the lover of orchestral music can learn, with a little practice, to read viola parts and 'cello or bassoon passages which run up into the tenor clef. The following illustration shows a 'cello passage with the middle measure written on the tenor clef, and also the same passage written wholly on the bass clef:

In some scores the music-lover will find the three trombone parts written on three clefs, alto, tenor, and bass, while in others they are written on the bass clef only. I have already

noted that bass clarinet parts are written sometimes on the treble and sometimes on the bass clef. The former is always used by French composers, and the latter nearly always by Germans.

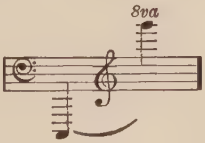
PART II

How the Orchestra is Used

Christine A. Charles

VI

General Principles

THE orchestra is an instrument, and composers have developed methods of writing for it. The fundamental principles of these methods constitute that branch of musical art called orchestration. It is not the purpose of the present volume to teach that branch; but it is entirely within its province to point out to the reader how composers make use of their majestic and many-voiced instrument. In compass and power alone it surpasses all other instruments. The compass of the modern orchestra is enormous. It extends from grave, low sounds to those of such acute pitch that the ear does not relish them if uttered loudly. The extreme normal compass is shown by the following illustration:

Mr. Corder, in his "Modern Orchestra and How to Write for It," gives this interesting dynamic scale: "Suppose the degrees of sound-intensity to range from 1 (in *ppp*) to 12 (in *fff*); then one might say roughly that

	1	2	3	4	5	6	7	8	9	10	11	12
Violins have a range of from	*ppp*	..	*mp*	..	..	..	*mf*	..	..	*fff*	..	..
The other strings	*ppp*	..	..	..	..	..	..	..	*fff*	..	..	..
Clarinets on high notes	..	..	*ppp*	..	..	..	..	*fff*	..	..	..	..
Clarinets low, flutes, oboes, and bassoons	..	..	*ppp*	..	..	..	*fff*	..	..	..	..	..
Horns	..	*ppp*	..	..	..	..	..	..	*fff*	..	..	..
Trumpets, trombones, and drums	*ppp*	..	..	..	..	..	..	..	..	..	..	*fff*
Harps	..	..	*ppp*	..	..	*fff*	..	..	..	..	..	..

I should modify this by shifting the pianissimo of low clarinet tones back to 2, that of drums forward to 2, and that of trumpets and trombones to 4.

Now, if there were nothing else to be considered, a composer would have to work according to some system in using the compass and force of his orchestra. What is known in regard to the method of doing so is the result of many long years of experiment by the early writers. In a general way, I may say that composers in writing a passage for the entire orchestra can give the melody to all the soprano instruments, the alto to all that have an alto compass, the tenor to all the tenors, and the bass to all the

basses. For example—flutes, clarinets, oboes, and violins may utter a melody in unison, while the remaining instruments supply the accompaniment. But it is rare that a composer writes in only four parts for orchestra. He usually spreads his chords out to six or eight parts, thus gaining in richness and sonority of tone.

But compass and power are not all the composer must consider. He has at his command a great variety of tonal qualities. We have already seen how the characteristics of certain instruments, singing as solo voices, are peculiarly suited to the embodiment of special kinds of music. Now the writer for orchestra must study the result of every possible combination of all or any of the instruments to the end that he may produce just the desired tone, and that he may never produce anything different from that which he wishes. The tonal tints of a modern orchestra are the richest pigments of the musician's palette, and he must know how to use them either singly or combined, just as the painter knows how to use his colors. The simplest way in which I can point out the peculiarities of the composer's work is by discussing separately the uses of the different choirs.

The principal requirements of good orches-

tration are solidity, balance of tone, contrast, and variety. Solidity is obtained by a proper dispersal of the harmony, so that certain notes in the chords do not stand out too prominently at the expense of others. The composer must not only be a master of harmony, but he must have the true harmonic feeling. He must have that almost instinctive grasp of the proportions of chords which can come only from real musical gifts cultivated by long familiarity with modern music. This feeling is not necessarily accompanied by restlessness and complexity of harmony. The harmonic effect of a simple diatonic Bach chorale is infinitely grander than the most intricate chromatic convolutions of a Charbrier overture. The true harmonic feeling is one that always produces artistic proportions, and these will permeate the instrumentation and produce solidity, provided the composer has sufficient intimacy with the instruments to prevent him from giving them the wrong notes. The foundation of solidity in orchestration is good writing for the strings. Their part of the score must always be planned with complete harmonic skill, not only because they are the main prop of the whole instrumental body, but because the man who cannot write well for strings will inevitably fail in handling wood and brass.

Solidity in tutti passages merges itself in balance of tone. This depends also upon a proper dispersal of the harmony and on a knowledge of the relative power of the instruments of the three choirs. For instance, it is not possible to play wood as softly as strings. Consequently, in a pianissimo the composer must know just what wood instruments to use and what parts of the chord to give them, lest he overbalance his strings. Solidity requires great skill in writing the middle voices. If they are too strong, the orchestration is muddy; if they are too weak, it is thin, and the orchestra, as the saying goes, is "all top and bottom."

Contrast is necessary in order that monotony of color may be avoided. It is obtained by using the three choirs of the orchestra separately, by employing any subdivision of each, or using simultaneously subdivisions of two, and so on. Variety is produced by mixing the tints. For example, a passage played by a flute alone changes color when an oboe sings in unison with the flute. Another tint results when a clarinet is added. It is not necessary to pursue this topic further than to say that the composer must know what tints will mix well to produce a new one.

VII

The Strings

SINCE the foundation of good orchestration is skilful writing for the strings, it is natural to consider that department first. The strings, as we shall see, came to their proper place in the orchestra in the works of the operatic composers. In Cavalli's "Giasone" (1649) we find vocal parts accompanied in something like the Handelian style by two violins and a bass. About twenty-five years later we find the string quartet, two violins, viola, and bass, established by Alessandro Scarlatti, founder of the Neapolitan school of opera. Since that time the strings have been the foundation of the orchestra, and although methods of writing for them have greatly changed, the fundamental principles remain the same.

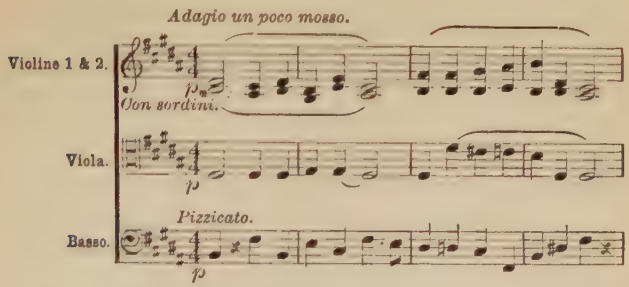
The general disposition of the strings may be fairly expressed by the formula already given, but worth repeating here: First violins equal sopranos, second violins equal altos, violas equal tenors, 'cellos equal barytones, and double-

basses equal basses. In certain circumstances this disposition is altered, because the compass of violas makes it possible for them to sing soprano music, though with a distinctly individual tone, while the 'cello can cover the ordinary range of an entire quartet. The individuality of tone possessed by the various stringed instruments is tolerably well known, except in the case of the viola. It is to its beautiful quality of tone that it owes its chief value. Gloomy, sombre, and even foreboding in the lower register, in its upper range it becomes mellow, tender, pathetic, and inexpressibly winning. No wonder that Berlioz selected it for the voice of the melancholy Childe Harold, or that Brahms made it play such important parts in his quartets. Its dramatic power is now universally recognized by composers, and from the position of a misunderstood and ignored member of the string quintet, it is rapidly advancing to the equally undesirable condition of being severely overworked.

It is a curious fact, however, that many of the younger composers show a singular want of skill in using the viola, and it is this which often upsets the balance of their orchestration. Perhaps this is due in some measure to the Brahms cult. Brahms's orchestration is not a good model. His middle parts are almost

always written too low or too heavily, and hence his instrumentation is muddy. It depends upon what a man is writing. If he is writing a symphony in the classic style, let him follow as closely as possible the methods of Beethoven. If he wishes to be more modern—and it is natural that he should—let him study Dvorák, whose instrumentation is almost perfect. Tschaikowsky's is, too, but the reader should remember that most of his works are sombre in thought, and that hence the instrumental style will not be suitable to light themes. Liszt and Rubinstein are good models. For thick, luscious coloring there is nothing better than Rubinstein's "Antony and Cleopatra" overture, and I can recommend also a careful study of Goldmark's overtures. Wagner, of course, is full of instruction, but a composer must know a good deal before he can discriminate sufficiently to get any benefit from Wagner. But to return to the viola.

The placing of the viola part is of the greatest importance in the color of the strings. For instance, in the slow movement of the famous piano concerto in E flat, called the "Emperor," Beethoven mutes his violins, but not his violas, and writes the basses pizzicati, thus:



The individuality and penetrating quality of the viola tone brings it out with marked effect in this passage, and Beethoven knew that so well that in the third measure he kept his second violins down and gave the violas the real alto part, because the harmonic significance of the passage rested so largely upon the F sharp, E sharp, E, and D sharp. If the second violin and viola parts in that passage were exchanged, the effect would be altogether different.

The increase of skill in the treatment of viola and 'cello parts, but chiefly of the former, is coincident with the development of the science of orchestration. Indeed, it may fairly be said that first-rate writing for the strings, which is the foundation of orchestration, depends largely upon the treatment of the viola part. Any composer knows enough when writing for strings to give his melody to the first violins and his bass to the basses. But the character of his har-

mony is to be determined by his middle voices, and it is in the treatment of these that we see growth in skill. Berlioz, in his treatise on instrumentation, says of the viola: "It has, nevertheless, been long neglected, or put to a use as unimportant as ineffectual—that of merely doubling, in octave, the upper part of the bass. There are many causes that have operated to induce the unjust servitude of this noble instrument. In the first place, the majority of the composers of the last century, rarely writing in four real parts, scarcely knew what to do with it; and when they did not readily find some filling-up notes in the chords for it to do, they hastily wrote the fatal 'col basso'—sometimes with so much inattention that it produced a doubling in the octave of the basses, irreconcilable either with the harmony or the melody or with both one and the other. Moreover, it was unfortunately impossible at that time to write anything for the violas of a prominent character, requiring even ordinary skill in execution. Viola-players were always taken from among the refuse of violinists. When a musician found himself incapable of creditably filling the place of violinist, he took refuge among the violas."

Haydn's symphonic scores show skill coupled with restraint in the viola parts. The instru-

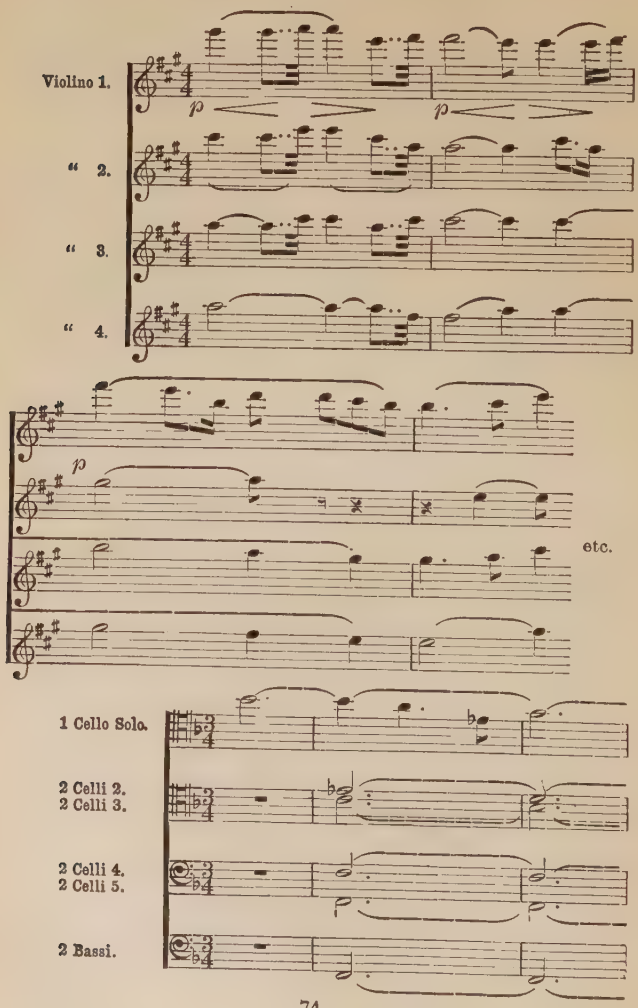
ment is never called upon to play passages of any difficulty except when errors will be covered up in the general body of tone. But in his scores the viola takes its correct place in a pure four-part harmony. It is seldom that Haydn undertakes to give his strings more than four parts to sing, though the reader will perceive that as each instrument is easily capable of producing two notes at a time, eight real parts can be written for a string quartet. The 'cello has few independent passages in Haydn's symphonies. It usually doubles the bass part. Mozart, without attempting to give the viola or the 'cello difficulties to overcome, made wider use of their special tone-qualities than did Haydn, though it must be admitted that Mozart's symphonies show a great deal of three-part writing for strings. Gluck, in his operas, brought out the dramatic value of the lower register of the viola, and Spontini, in "La Vestale," was the first who assigned the melody to it. Méhul, the French opera-writer, used it so much that Grétry exclaimed," I'd give a guinea to hear a first string." Beethoven, in the andante of his fifth symphony, gives the melody in the opening bars to the violas and 'cellos in unison, a very rich and beautiful effect.

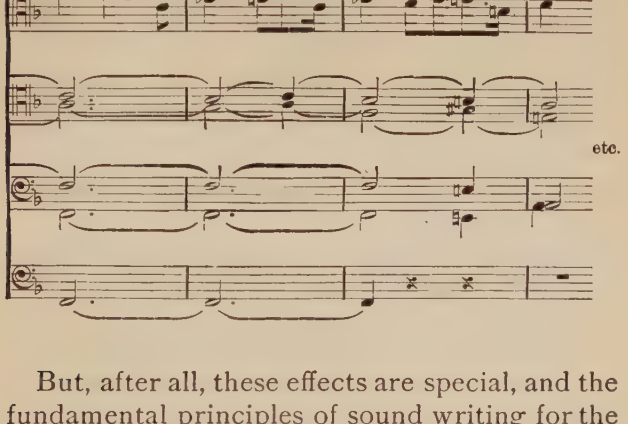
In general it may be said that the string

quintet did not attain the full measure of its usefulness in the hands of the classical writers till the viola and the 'cello had begun to be treated with freedom and independence. Then there was no longer any difficulty in writing a full four-part harmony, upon which depends the solidity of the string portion of the score. The best test of scoring for strings is to consider whether it sounds full and self-sustaining when unsupported by any wind-instruments. The lover of orchestral music should give especial attention to Beethoven's scores. Here he will find the perfection of the classical style of writing, which employed almost exclusively a four-part scheme and kept each instrument in its normal place except when used as a solo voice. With the romantic movement scoring for strings began its search after unusual tone-tints, and composers began to learn that they could obtain these in two or three ways—by increasing the number of voices in their harmony, by taking advantage of the large registers of violas and 'cellos and sometimes carrying them above the violins, and by employing solo instruments among the orchestral mass. The beautiful effect of divided string parts in a simple form is heard in the opening measures of Mendelssohn's "Midsummer Night's Dream" overture, but if the reader desires to find the extreme

modern style of writing for numerous voices in the strings he must go to Wagner. He, indeed, is guilty of occasional abuses of the practice. In the accompaniment to *Brangäne's* song of warning in the second act of "Tristan und Isolde" he divides the strings into fifteen parts, but I am quite sure that no human ear can hear all of them. It is seldom that more than eight real parts can be made advantageous, and then chiefly in slow movements.

It all depends upon what the composer wishes to accomplish. If he desires brilliancy in an animated movement, he will use his first violins in unison and above the middle of their register. If he wishes to get more brilliancy, he will write them still higher and double them with the second violins in the octave below. If he writes them in the middle register and doubles them with the second violins, he will get more sonority, but less brilliancy. On the other hand, if he desires richness of harmony coupled with mystery, or ethereal effects, let him divide his strings into several parts. After that it is a mere matter of register. If he writes high, he will get aërial delicacy and tenderness; if he writes low, he will get pathos as well as tenderness. No better examples can be offered than these from "Lohengrin" and "Die Walküre:"


Violino 1.
" 2.
" 3.
" 4.
p
p
p
etc.
1 Cello Solo.
2 Celli 2.
2 Celli 3.
2 Celli 4.
2 Celli 5.
2 Bassi.

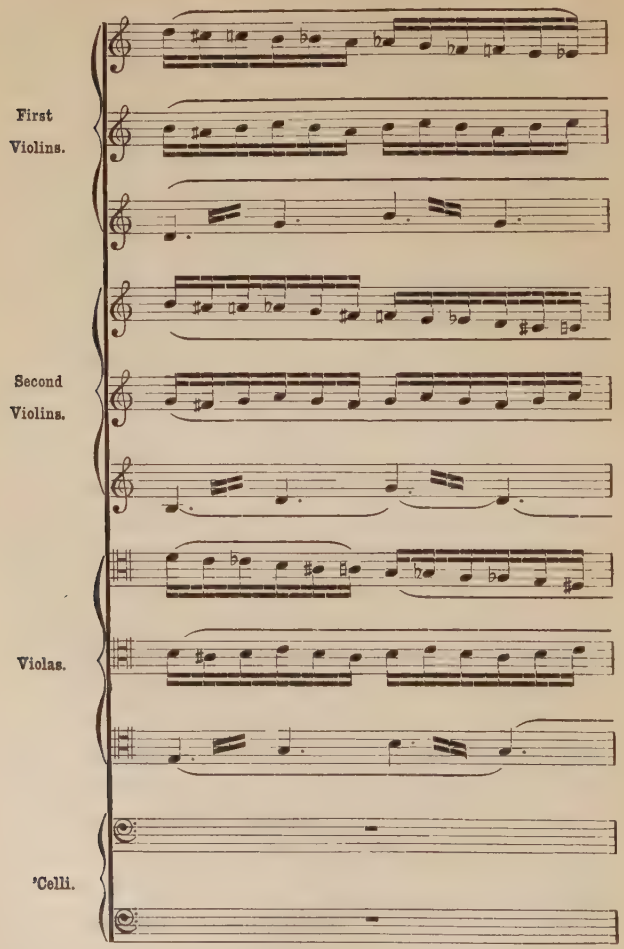


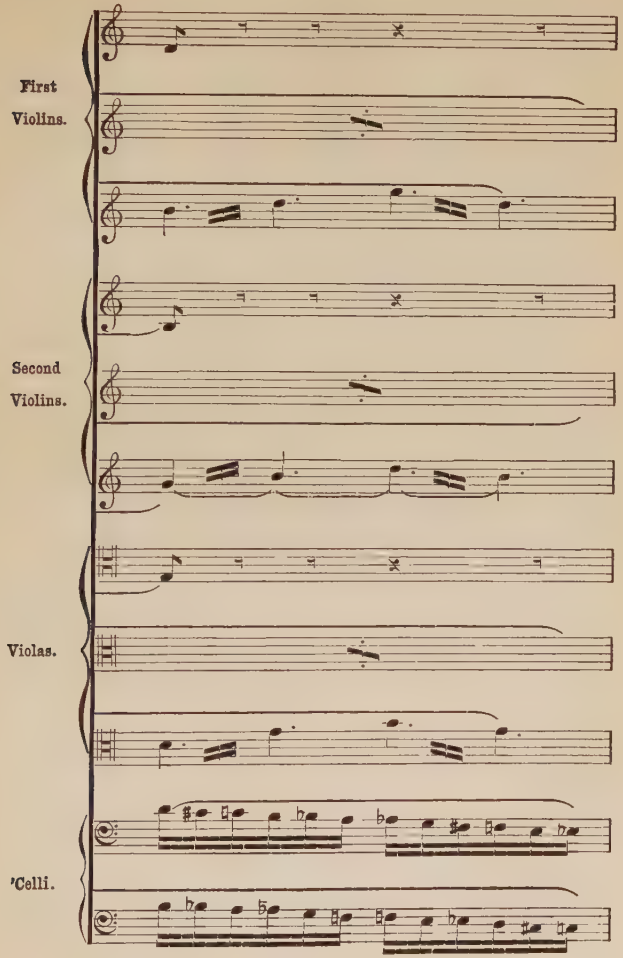
But, after all, these effects are special, and the fundamental principles of sound writing for the strings are best exemplified by the writings of the classical composers. The chief question for the student of music is: Which of the classical writers is the best model? This is a question not easily answered. Haydn's earlier works are not at all to be commended, while his later compositions are full of sound scoring. His quartets are not excelled as examples of clear, well-balanced writing for strings, but his symphonies do not reveal fully the value of the viola.

Specific instrumental coloring began with Mozart, and yet he is the finest example of continence and sobriety in orchestration. His

string parts are generally substantial and well planned, but, nevertheless, I should hardly advise a beginner to study them. The older composers are like ancient history; one must have sufficient information to know what to accept and what to reject in order to read them with advantage. It will not profit any beginner in instrumentation to go farther back than Beethoven. The great symphonist's string plan is always notable for its breadth, solidity, and flexibility, and there is nothing in the fundamental work of string writing which cannot be learned from him. But there is another composer whose works are neglected by professors and masters, and yet whose orchestration excels all other in the classic school in buoyancy, clarity, suavity, and polish, and to the constant study of his scores I heartily commend all who desire to master the basis of modern instrumentation. I mean Felix Mendelssohn Bartholdy. His "Midsummer Night's Dream" is in itself an epitome of the science of instrumentation, and students and amateurs would do well to give many days and nights to its study.

I advise the student of orchestral effects to examine particularly the overture. For lightness and transparency nothing in the way of writing for the strings excels the opening measures for first and second violins in four parts,

with the addition at bar 24 of a most effective pizzicato passage for viola. On page 5 (Litolff score) the first violins, doubled an octave below by the second, carry the melody against a tutti in which the string plan is notable for its simplicity and solidity. On page 9 there is a model passage for strings with violas divided, which is worthy of attention. A concert-goer should seek out such passages in scores and mark them. Then at a performance of the work note the effect. By following out such a plan the music-lover will soon come to perceive the differences between the conservative scoring of the early classical writers and the venturesome and brilliant achievements of the moderns. From such a clear and simple plan of dividing strings as that of Mendelssohn in the overture quoted grew the amazing contrivances of modern writers, such as the passage in Liszt's "Mazeppa" for first violins in three parts, the third playing pizzicato against shakes by the other two, second violins in three parts, violas and 'celli in two each; or the thunder-storm in Wagner's "Das Rheingold," where the strings play a broken chord in twenty different ways, or the superbly effective passage from Nicode's "Das Meer," which is constructed on this scheme of divided strings with contrary motions:

First
Violins.
Second
Violins.
Violas.
'Celli.


First
Violins.
Second
Violins.
Violas.
'Celli.

The effect of this remarkable passage is one of the things which go to show what can be done in the way of tone-coloring with strings alone. The vital points for the reader to bear in mind are those which have been brought out as to the distribution of the harmony in the strings and the necessity of writing for them so that they are independent. To follow the development of skill in this among the successive composers is one of the most fascinating branches of musical study

NOTE.—The tremolo and pizzicato of bowed instruments were invented by Monteverde (1568–1643). The striking of chords on such instruments was introduced into orchestral music by Haydn. Mutes were first used in the orchestra by Gluck in his "Armide" The oldest and most familiar example of the contrast between muted and unmuted strings is found in the "Creation" at the words, "And God said 'Let there be light.'" The mutes are taken off at "And there was light" The oldest known use of harmonics is that in Philidor's opera "Tom Jones" (1765). The division of violins into more than two parts was first employed by Weber. Beethoven introduced divided violas in the last movement of the Ninth Symphony.

VIII

The Wood-Wind

WHENCE originated the custom of calling the collection of wooden wind-instruments used in the modern orchestra "the wood-wind," I am quite sure I do not know. It is still more common among musicians to speak of them simply as "the wood," notwithstanding that the stringed instruments played with a bow are also made of wood. It is a convenient term, and its meaning being pretty generally understood, only a purist in language would object to its employment. The "wood," then, in the modern orchestra consists of flutes, oboes, clarinets, and bassoons Of these instruments the flute is the oldest, and was the first to be used in those indiscriminate assemblies of instruments corresponding to orchestras in the early days of the art. The flute was used in ancient Egypt, and, for the matter of that, so was the oboe, which found its way into the orchestra at least as far back as Beaujoyeux's "Ballet Comique de la Reine" (1581). Every-

one knows a flute when he sees it, and is acquainted with its tone, but I have learned by experience that very few persons know anything about the other wood instruments.

Yet their importance in the modern orchestra cannot be overestimated. Half the tone-coloring of our symphonic works and operatic scores depends upon skilful combinations of the tone-tints of wooden wind-instruments either with one another or with other members of the band. It is almost wholly in the direction of variety of combination that the art of writing for wood-wind has developed. In the early days, before a system of enriched instrumentation had been developed, it was the custom to treat the wood-wind parts without any design that affected the display of their coloring qualities. Sebastian Bach's scores, for instance, show a complete absorption of the polyphonic style. He regarded his instruments as so many voices, and he treated them as such. Each part was written in a manner essentially melodious, and related to the other parts strictly in contrapuntal style The conception of purely orchestral effect did not find birth in the mind of Bach. He was too entirely occupied with the development of the polyphonic subject to discover the possibilities of mixed tone-tints. Furthermore, he was not sufficiently imbued

with a feeling for the harmonic style—the style in which a leading melody is supported by a subsidiary accompaniment founded on chords, as in our songs. This is the style on which our symphony rests, but it was foreign to Bach's genius, which was fundamentally fugal.

Hence, Bach did little toward developing the combining powers of the wood-wind. As one writer has excellently said: "He preferred to employ wind-instruments for the purpose of enlarging his original design, rather than that of strengthening or decorating it. When he added a flute or an oboe to his score, he loved not only to make it *obbligato*, but to write it in such wise that it should form a new real part. Hence, even in his regularly constructed arias, the voice is scarcely so much accompanied by the various instruments employed as made to sing in concert with them, the score containing as many real parts as there are solo voices or instruments introduced into it." Dr. Parry, in his "Evolution of the Art of Music," in speaking of the difference between instrumentation of this kind and that of a later date, says: "In the instrumentation of the great masters of the earlier generation, the tone-qualities seem to be divided from one another by innate repulsion; but in the harmonic style they seem to

melt into one another insensibly, and to become part of a composite mass of harmony whose shades are constantly shifting and varying."

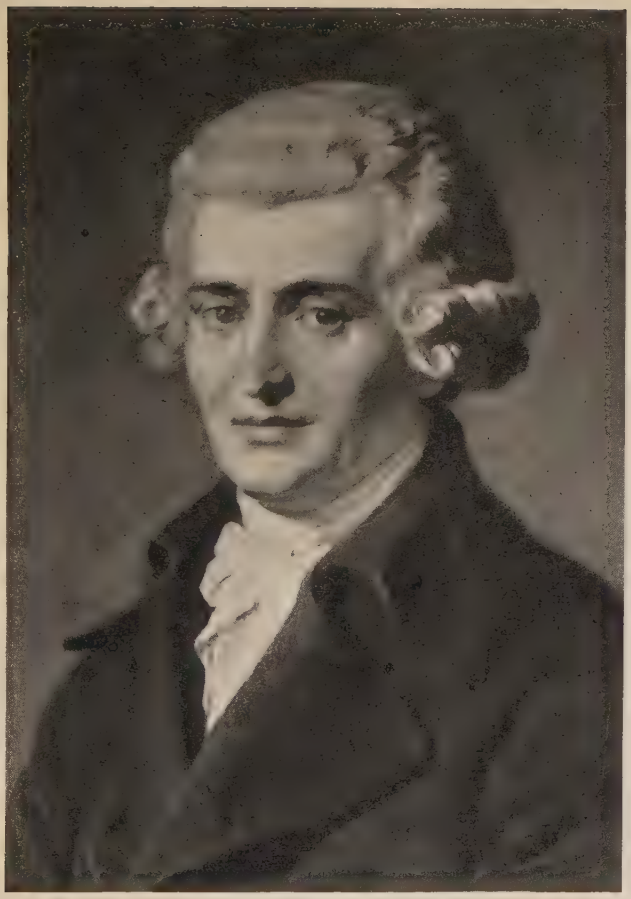
Handel's wood-wind is employed with greater variety than Bach's. This was to be expected of a composer who, in the first place, was in closer touch with the public, and hence more likely to recognize and yield to the demand for effects. In the second place, Handel, not being secluded as Bach was, stood more forward in the march of musical evolution. He was an opera-writer, and this brought him into immediate contact with the harmonic style as practised by the Italian opera-writers. He learned from some of them, too, the use of grandiose mass effects. The application of these ideas to his instrumentation produced results far different from any conceived by the introspective and historically solitary genius of the great Bach. Handel used a larger orchestra than Bach, yet did many things in the same way. For example, he often wrote for his instruments in the polyphonic style, but in the accompaniments to his great choruses he wrote for several oboes in unison with the violins and a body of bassoons in unison with the basses. At other times he treated his wood-wind parts as figured ornamentation of the more simple string parts, and again he employed the strings

and wind alternately, as modern composers do so frequently. Flutes he rarely used except as solo instruments, as in the "Sweet Bird" aria, and clarinets he did not have. But the idea of using some of the wind-instruments, as horns and trumpets, in pairs, had come into existence in Handel's time, and it was not long before this plan was applied also to the wood-wind.

Its employment naturally began with the recognition of the inability of the wood-wind to play such intricate passages as strings could, and also of their power to sustain the long notes of supporting chords. These features of wood-wind writing existed even in the scores of Scarlatti and Lulli, but it was not until the harmonic style began to be clearly distinguished from the polyphonic in orchestral works that they became generally recognized. In the scores of Emmanuel Bach, the son of Sebastian, we begin to find wood-wind treated in the pure classic style. The chords, to be sure, are very thin, and the composer shows a "'prentice hand" at the dovetailing of his wind parts together so as to make a firm structure, but the skeleton of the modern form is there.

Haydn's scoring shows a curious combination of Handelian ideas with later developments. The Handelian plan of strengthening string parts with wind parts in unison seems to

have taken some hold of Haydn, for he rarely writes unsupported wood-wind passages in his symphonies. He keeps his first violins singing the melody most of the time, and gets variety by doubling them, now with flutes, now with oboes, again with bassoons. A wind solo is very rare. He shows similar weakness in writing for the wood-wind in its internal relations. His clarinet parts usually double those of the oboes or the flutes. There is a great deal of octave writing, and he seldom gets more than three real parts in his wood-wind. It is only because he so constantly employs the string quartet that his symphonic scores do not sound thin. For example, in a passage for wood-wind and strings near the beginning of the familiar symphony in D, the first flute, except in one chord, doubles the second violin at the octave above, while the second flute supports the principal notes of the melody, played by the first violins, at the octave below. The oboes in unison double the violas at the upper octave. The two clarinets in unison double the first flute an octave below. The bassoons and basses play in unison. Toward the end of the last movement there is a passage in which the wind plays sustained chords, and in this the wood is treated in a more open style of harmony. Haydn learned much from Mozart,



HAYDN.

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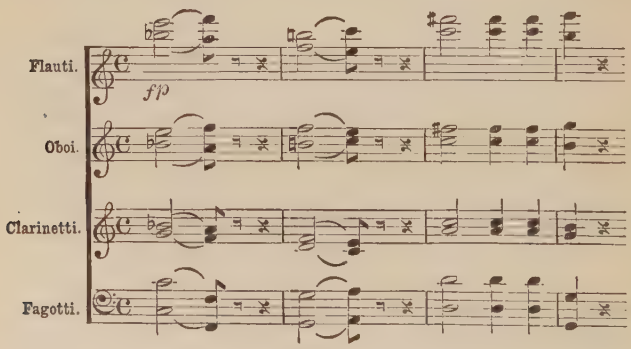
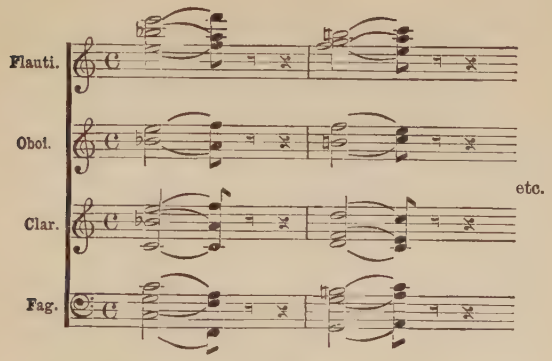
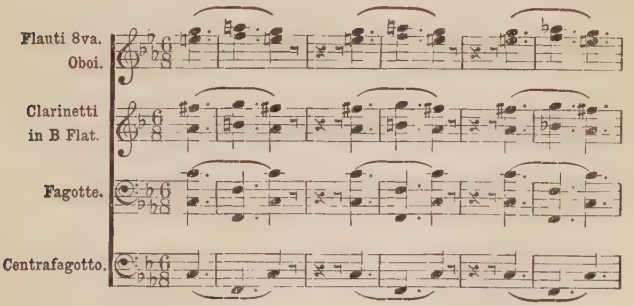
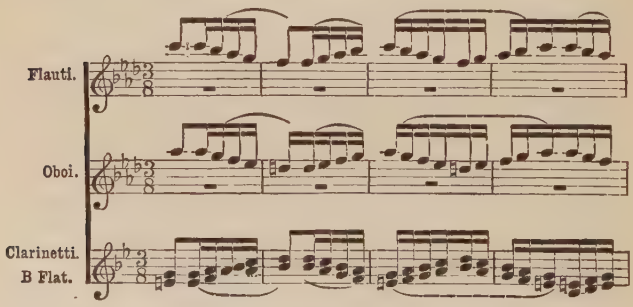
however, and in the "Creation" and "Seasons," his writing for wood-wind shows much greater freedom, and a decidedly more definite attempt to get at the tonal characteristics of the instruments.

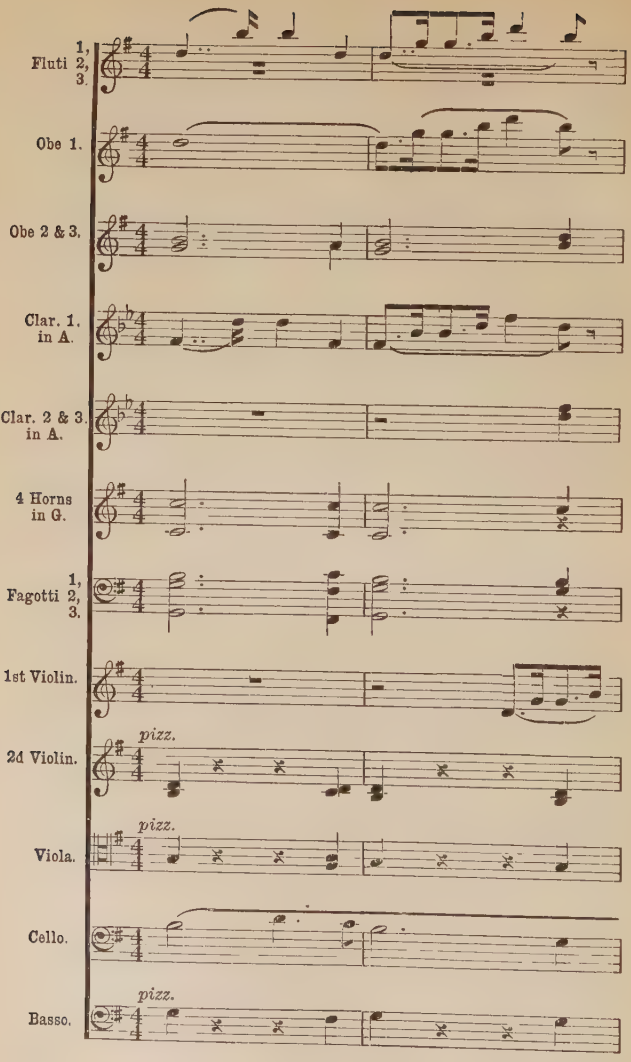
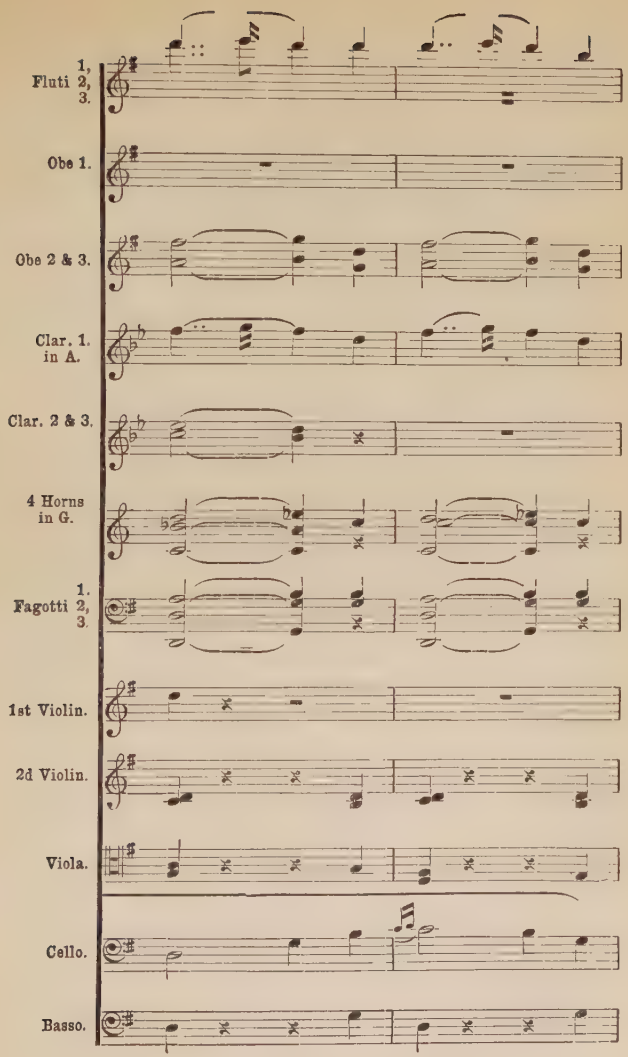
There can be no question that Mozart's orchestration shows a large improvement on Haydn's, and it is, perhaps, easier for the amateur to discern this in his treatment of the wood-wind than anywhere else. Passages contrasting the whole wood choir with the strings are more numerous, and the combinations of wood with strings show more definite attempts to put new tints upon the symphonic canvas. One finds, for instance, in the G minor symphony the flute tone contrasted with the oboe, combinations of flute and oboe contrasted with bassoon, combinations of flutes, bassoon, and strings, and other effects which give life and variety to the instrumental coloring.

Nevertheless, a conventional manner of treating the wood-wind found its way into general use, and it prevailed until the romanticists, in reaching out for new forms and manners of expression, revolutionized the system of scoring. The old-fashioned way was to employ the four pairs of wood-wind instruments always in thirds and sixths. The flutes almost always took the melody and the next interval below it. The

oboes either doubled the flutes in the octave below, or the first oboe doubled the second flute, and the second oboe took the next lower degree of the chord. The clarinets filled in the middle voices, and the bassoons played the bass, most frequently in octaves. The harmony was close, and the texture of this instrumentation was always solid, and, it must be admitted, at times muddy. This manner of writing is found in all Beethoven's earlier works. For example, here is the opening of the first symphony, the horns and strings (pizzicati) also appearing in the score:

That is perfectly adapted to its purpose; but the chances are that a composer of to-day would have used three flutes, three clarinets, and three bassoons, and would have thickened the harmony by raising the clarinet voices and

bringing the first bassoon up nearer the middle, thus:

Brahms followed Beethoven's early style of scoring for wood, which, it must always be recollected, lies at the foundation of the art. An example from Brahms's C minor symphony will show the modern writer's adoption of his predecessor's plan:

The modern style of writing for the wood-wind choir introduces more passages in contrary motion and a more dispersed harmony. The close chords of the classicists cannot be excelled for their purpose, but the romanticists had new aims and they took advantage not only of unusual tone-tints but of the increased richness brought about by using more voices and extending their chords. Beethoven's symphonies show a rapid progress toward the modern flexibility of methods in writing for wood-wind. For instance, note the lovely effect of this piece of contrary motion in the Fifth Symphony:

As we advance through the pages of the master's symphonies we find a constantly increasing flexibility in the treatment of the wood, until in the Ninth we meet with passages containing effects which, when closely examined, seem to be almost amazingly modern. Of

course, one never finds in Beethoven's scores any attempt to make an effect for its own sake. The master symphonist was altogether too busy in giving his thought expression to think of little tricks of instrumental dress. Because of his continence in this matter some modern commentators have expressed the belief that these symphonies would be improved if re-orchestrated according to contemporaneous methods. I presume that someone will eventually try the experiment, and then it will be discovered that Beethoven's instrumentation was perfectly adapted to his musical ideas. On the other hand, a good deal of our modern music would stand revealed in its naked thinness if it were re-orchestrated in the austere style of Beethoven or with the sunny simplicity of the Mozartian manner. The extreme development of wood-wind writing as known in our day is to be found in the scores of Wagner. No one has surpassed his treatment of the wood in his earlier dramas, and the reader may accept *Elsa's* entrance to the cathedral in Act II. of "Lohengrin," and the exit of *Elizabeth* in Act III. of "Tannhäuser," as complete expositions of writing for the unsupported wood-wind. In the introduction to the third act of "Lohengrin" appears this passage, which shows how Wagner could use his wood in relation to the rest of his orchestra:


1, 2, 3. Fluti
Obe 1.
Obe 2 & 3.
Clar. 1. in A.
Clar. 2 & 3. in A.
4 Horns in G.
1, 2, 3. Fagotti
1st Violin.
pizz.
2d Violin.
pizz.
Viola.
Cello.
pizz.
Basso.

1,
Fluti 2,
3.
Obe 1.
Obe 2 & 3.
Clar. 1.
in A.
Clar. 2 & 3.
4 Horns
in G.
1.
Fagotti 2,
3.
1st Violin.
2d Violin.
Viola.
Cello.
Basso.

The reader will at once see the open style in which the wood-wind parts are constructed. The horns serve to enrich and deepen the harmony, while the strings are used chiefly for a rhythmic effect. Weber's scoring is full of admirable writing for the wood-wind, and for other fine examples I can once more refer the reader to Mendelssohn's " Midsummer Night's Dream " music.

The immense variety of coloring to be obtained from the wood is due largely to its power of producing independent harmony. Owing to the large register of the clarinets, they can be used as either soprano or low contralto instruments, while the wide scale of the bassoons permits them to be treated as basses, barytones, or tenors. It thus becomes possible to write in full and euphonious four-part harmony for two flutes and two clarinets, two oboes and two clarinets, two flutes and two bassoons, two oboes and two bassoons, or two clarinets and two bassoons. Each of these combinations differs in color from the others. If now a bass clarinet be added, it becomes possible to give it the fundamental bass and to use the bassoons for middle voices. The addition of an English horn gives further possibilities. If the number of flutes, clarinets, and bassoons be increased to three of each, the

composer has still more combinations. And when it is recollected that every one of these wind-instruments can be used as a solo voice, the range of variety becomes wider yet. But the reader must also bear in mind that the addition of horns and strings still further alters the tonal colors. In short, the wood-wind provides the most useful means of giving variety of color to an orchestral score, and all modern writing abounds in ingenious, surprising, and expressive effects made with the wood choir. Yet when the thunder of an orchestral tutti is required, there is no better way to write for wood than that of Beethoven's symphonies.

I have said nothing yet in this chapter about the piccolo and the contra-fagotto. The piccolo is a much misused instrument, but it is capable of admirable effects, as may be seen in the storm in Beethoven's "Pastoral" symphony, the magic-fire music in "Die Walküre," or the "Dance of the Automatons" in Delibes's "Sylvia" ballet. The double-bassoon, or contra-fagotto, allows the composer to carry the bass of his wood-wind choir an octave lower than the compass of the bassoon. The instrument is coarse in tone and not capable of performing rapid passages, but it has its value, as is shown by its employment in the last movement of Beethoven's Ninth Symphony or Brahms's

"Chorale St. Anthony" variations. A double-bass clarinet has been invented by a New York musician. I have not heard this instrument, but am told by competent judges that it is of high value. It carries the bass an octave lower than the bass clarinet, and is capable of great agility and of the finest gradations of tone. Richard Strauss, Weingartner, and other German musicians have promised to introduce it in future scores, and I dare say it will become a fixture in the orchestra. The great value of the clarinet color to the orchestra cannot be overestimated, and any increase in its range and intensity will surely be welcomed by composers.

IX

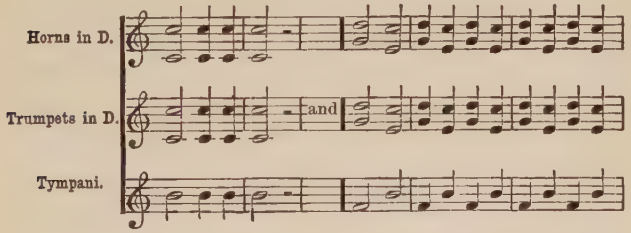
The Brass and the "Battery"

THE brass choir may be dismissed with comparative brevity, because methods of writing for it have changed on lines similar to those followed by the wood. In the early scores one finds that the trumpets were the most noticeable members of the brass, but in later music the horns are far and away the most important. It is possible to get almost any amount of richness, solidity, and variety of color out of an orchestra composed of the wood-wind, four horns, and strings; but if two trumpets and three trombones be substituted for the horns, the ingenuity of the composer will be severely taxed to prevent his work from sounding coarse in forte passages. One reason for this is that, when played moderato, horns blend perfectly with either wood or strings, and when played forte they become brassy in tone and can be made to give a good imitation of trombones. Let the reader note, when he again hears the prelude to the third act of "Lohengrin," that

the brass theme is played the first time by the horns, which sound like trombones robbed of their roughness. The second time the theme is heard the trombones enter and the tone at once becomes brassy. In fact, it may be said at once that the brassy quality of brass instruments comes out fully only when the tone is forced. When it sings moderato the brass choir is capable of the most beautiful effects of rich, organ-like sonority. One has only to recall as a perfect example of this the prayer in the first act of "Lohengrin," one of the most effective of all modern pieces of writing for brass. When however, immense sonority is required, the fortissimo of the brass choir is the composer's heavy gun.

The treatment of the trumpet parts in the works of Bach and Handel will be found to differ greatly from the modern manner of writing for them. In the first place, the instruments employed by those composers must have had mouth-pieces of a different kind from those of to-day, or else the players knew some things which ours do not. Both Bach and Handel wrote passages for the trumpet so high that contemporaneous musicians cannot perform them. But that is a fact of less importance to the reader of the present book than the general principle of the scoring. The old composers,

then, wrote for trumpets in pairs and made them do a great deal of their work in octaves, except in some of the earliest scores, in which three trumpets were sometimes employed. Even Monteverde wrote for one clarino (a small trumpet), three trombe (the ordinary trumpet), and four tromboni. Handel used three trumpets in the "Dettingen Te Deum," and Bach in the "Lobe den Herrn."

Haydn used the trumpets, horns, and drums in the primitive style. The parts were written either in octaves or in sixths — occasionally in thirds—and on tonic and dominant chords, worked with the drums chiefly to enforce the tutti. Passages such as the following abound in Haydn's symphonies:

It seems hardly possible to contrive a more hollow plan of writing than that which gives to five instruments only three notes of a chord (though the horn parts actually sound an octave lower), yet it is a method which survived till

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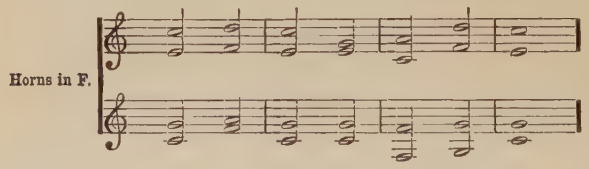
Beethoven's time, and, so far as the trumpets go, even the mighty Ludwig made no improvement upon it. Mozart's scores show a very slight advance upon Haydn's. He more frequently gives three notes of the chord to the brass instruments, but he uses them in the same general way. Of course, these old composers were much restricted by the mechanical limitations of their instruments. They had the old keyless horns and trumpets, and not having the whole scale at their command, they had to write with much restraint. In the horn parts they were further compelled to remember that certain notes could be produced only in the "stopped" form, that is, by the use of one hand inserted in the bell of the instrument. These stopped notes differed wholly in quality from the open tones. This trouble lasted until the F valve horn was perfected within the present century. Before that, however, composers had begun to endeavor to give more variety to the horn parts. Weber and Beethoven both made admirable use of this, the most noble and expressive of the brass instruments, and the scores of Rossini also contain some excellent specimens of horn writing. Rossini, indeed, who was the son of a horn-player, may be said to have introduced a new style of writing for the instrument, treating it

with great brilliancy as a florid solo singer. But the substantial principles of horn writing, as practised in the modern orchestra, began with Mozart, who used the instrument with much skill, especially in those scores which do not call for trumpets. Beethoven made more exacting demands upon the instrument, and there is no more effective horn passage in existence than the famous trio of the scherzo in the "Eroica" symphony. The passage is too long for quotation here, but is, of course, familiar to every music-lover. As an example of perfect writing for a solo horn nothing in symphonic music is better than the opening of the slow movement of Tschaikowsky's fifth symphony.

The methods of employing horns are so numerous that it is not practicable to recount all of them. It may be said, however, that in small scores, which call for wood-wind, two horns and strings, these instruments are often used to form chords with either the wind or the strings. Two horns and two bassoons make very effective harmony; in fact, when the four instruments are played moderato it is almost impossible to distinguish the bassoons from the horns. The latter also blend excellently with clarinets or the low tones of flutes. In writing for four horns some composers give the two upper notes of the chord to the first and second

and the two lower to the third and fourth, while others dovetail the parts by giving the first and third notes to the first and second horns. Of course, either method is subject to variation, as in a passage like this:

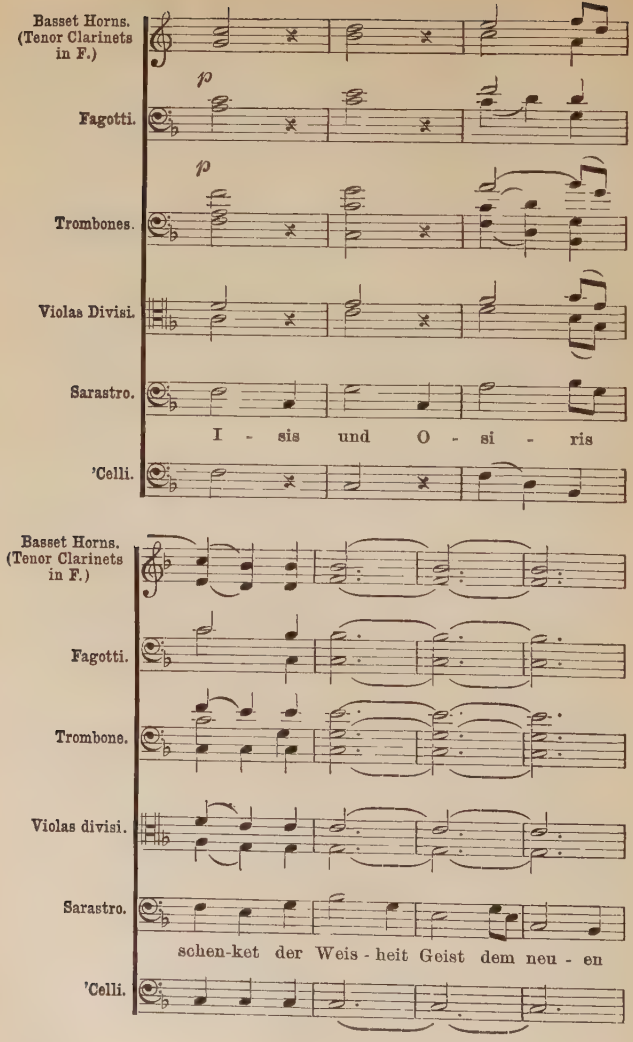


Here the dovetailing of parts is carried throughout, yet in the third bar the third and fourth horns double the fundamental bass in octaves.

The trombone is a very familiar instrument, and little needs to be added to what has already been said about it. There are slide and valve trombones. The former is the kind always employed in symphonic orchestras. The reader will recognize the instrument by the action of the player's arm in moving the slide in and out. This shortening and lengthening of the tube of the instrument changes its key and thus enables the player to produce in open tones every note of the chromatic scale. The valve trombone is played with keys like those of a cornet. It is less brilliant and sonorous than the slide instrument. Trombones were employed as far back as Monteverde's "Orfeo," early in the seven-

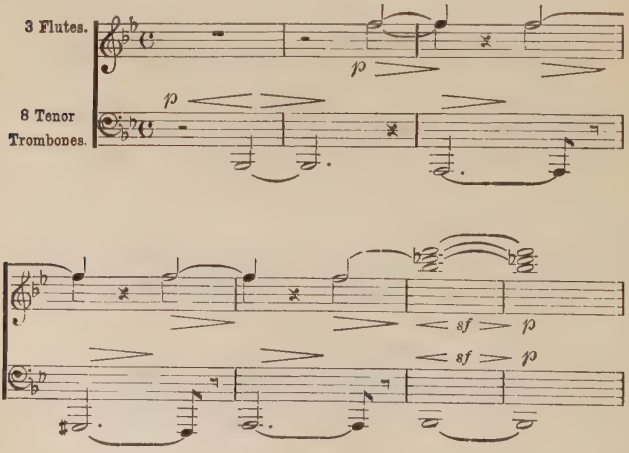
teenth century, but there seems to have been no definite use of them till the time of Gluck. He thoroughly appreciated the majestic dignity of dramatic utterance of which the trombone was capable, and he used it with eloquent effect. Furthermore, he established for all time the custom of writing for trombones in three parts. After him, as Gevaert pertinently notes, the three trombones became a distinctive feature of dramatic scores, for the classic symphony found no use for their immense sonority till Beethoven called it to his aid in voicing the triumphant emotions of the finale of the Fifth Symphony. Nevertheless, the trombone is not necessarily an instrument to be used only in producing great volumes of tone. A beautiful example of its value in rich and subdued harmony, in company with other instruments, is to be found in the accompaniment to *Sarastro's* grand air in Mozart's "Magic Flute," as is shown on the following page.

The three trombones, as in this example, usually play three-note chords, except when required to play in unison. The tuba fills out the harmony by doubling the bass part in the lower octave, or forming a four-part chord with the three trombones. There are tubas in several keys, but it is customary to write for the instrument without making any transposition.


Basset Horns. (Tenor Clarinets in F.)
Fagotti.
Trombones.
Violas Divisi.
Sarastro.
I - sis und O - si - ris
'Celli.
Basset Horns. (Tenor Clarinets in F.)
Fagotti.
Trombone.
Violas divisi.
Sarastro.
schen-ket der Weis - heit Geist dem neu - en
'Celli.

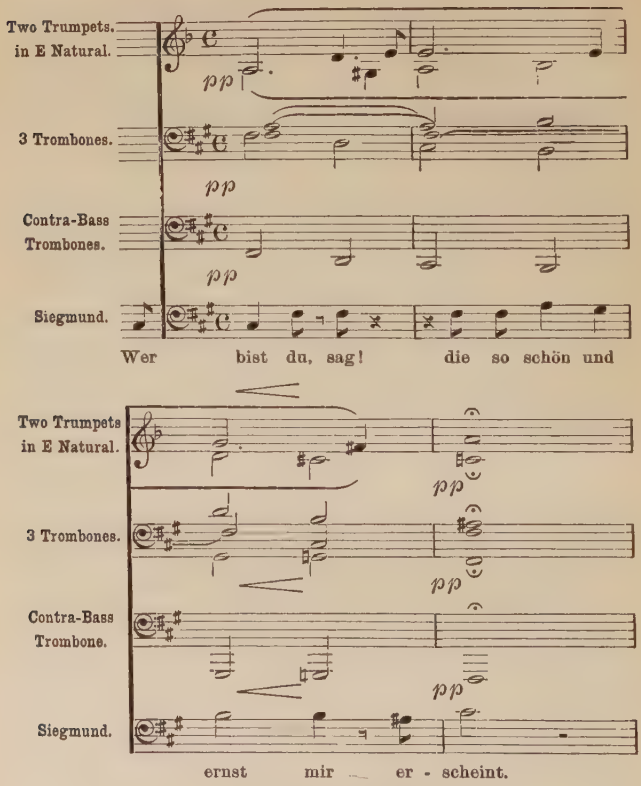
There is a fine tuba solo, in unison with the double-basses, at the opening of Wagner's "Eine Faust" overture, and frequent examples of harmony for three trombones and tuba are to be found in the works of the Bayreuth master. In writing for the full brass choir alone a composer has the choice of several methods. He may give the melody to a trumpet or cornet, and use the other instruments for the harmony, or he may let a horn (or two horns in unison) take the melody. If he desires much force, he may give the melody to a trumpet and double it with a trombone. The natural method, however, is to let a trumpet, which is a good soprano voice, sing the air, while the other trumpet and three of the horns take the middle voices, the fourth horn and first and second trombones the lower middle voices, the third trombone and tuba the bass. Similar methods are employed where the brass joins with the rest of the orchestra in the thunder of a tutti fortissimo. The reader will find a most admirable example of this style of writing in the climax of the prelude to "Lohengrin."

It should be noted that the brass choir offers certain possibilities of color both within itself and in combination with other instruments. Three trumpets are capable of independent harmony, as are four horns, and three trom-

bones. Again, owing to the deep range of the horn, trumpets and horns may form a separate choir, or either trumpets or horns may be united with trombones. The entire brass band may be used with the wood, the strings being silent, or with the strings and without wood. Part of the brass may be used with part of the wood, as in the opening of the "Tannhäuser" overture, where two clarinets, two horns, and two bassoons produce a complete and satisfying harmony. Weird and bizarre effects can be produced by combinations of contrasting tones. Perhaps there is no better example than this remarkable use of flutes and trombones in Berlioz's "Requiem":

These notes had never been written for trombones before, and the composer, whose knowledge of the capacities of instruments has never been excelled, wrote in the margin of the score: "These notes are in the instruments and the players must get them out."

As I have already noted, the operatic composers, in their search after dramatic effects, invented many of the instrumental combinations afterward adopted by the composers of purely orchestral music. The scores of Mozart and Gluck, for instance, are rich in passages which make use of the harmony of trombones, and the reader who wishes to study such effects in their early form should note the accompaniment to the words of the *Commendatore* in the cemetery scene of "Don Giovanni," to the solo and chorus, "Dieu puissant," Act I., scene 3, of Gluck's "Alceste," the air "Divinités du styx" in the same work, and the chorus "Vengeons et la nature," Act II., scene 4, of "Iphigenie en Tauride."

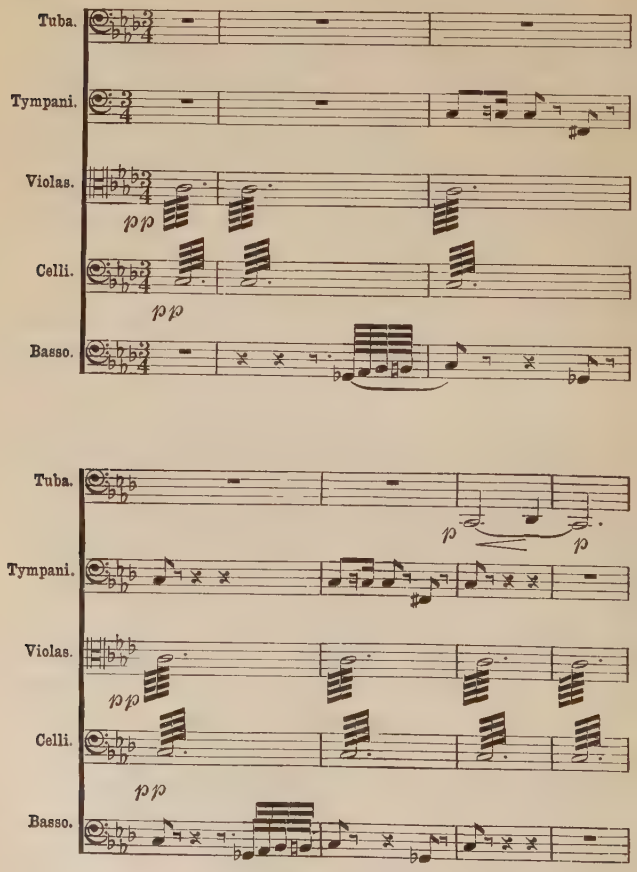
All that the moderns can do with trombone harmonies they learned from Gluck, and by applying his use of dispersed chords to the whole brass choir they have produced new and noble orchestral colors. Where did Wagner learn such things as this, if not from Mozart and Gluck?



Not much needs to be added to that already written about the percussive instruments employed in the orchestra. The tympani remain the most important of these. It has been found that one player can perform upon three drums

with little more difficulty than upon two, and hence composers now frequently score for three, and sometimes for four. It is not uncommon for large symphonic scores to call for three tympani together with bass-drum, cymbals, and other percussive instruments. Something has already been said about the methods of writing for tympani, but there is a little to add. It has been noted that the primitive manner of writing was to give one drum the fundamental note of the tonic chord, and the other that of the dominant, but previous to Beethoven's day it was the invariable practice to write the tonic above and the dominant below, thus tuning the drums at the interval of a fourth. The other style, with the tonic below and the dominant above, making a fifth, was introduced by Beethoven. The same master saw the advantage of tuning his tympani in still other ways, and in the finale of the Eighth Symphony and the scherzo of the Ninth he wrote for them in octaves at their extreme compass (F to F). Again, in the beginning of the last act of "Fidelio," he wrote their parts in A and E flat in a dissonant passage of much dramatic power. Weber followed Beethoven's example and wrote for tympani in C and A in the incantation scene of "Der Freischütz," and Wagner has made a similar use of the drums

in the beginning of the third act of "Siegfried."



In general, it may be said that until the close of the eighteenth century composers employed tympani only in brilliant passages, such as marches, overtures, jubilant choruses, or hymns of thanksgiving; and in these they were always heard with the trumpets. It was Beethoven who took the shackles from the expressive powers of these valuable instruments and showed how they could be made to utter notes of overpowering solemnity and mystery.

The bass-drum is frequently used in the orchestra either with or without the cymbals, and the latter are often heard without the drum. Both instruments are sadly overworked by noisy composers, yet they have their value. The military snare-drum is used in characteristic passages where a military idea is to be suggested. Tambourines and castanets are also used in appropriate places. The gong, which is said to have found its way into western Europe at the time of the French Revolution, when it was used as a funeral bell, found its way into the opera-house as an aid to music of scenes of death or terror, as in Meyerbeer's resurrection of the nuns in "Robert le Diable." It is now used occasionally by the symphonists in passages of portentous significance.

Bells came into the orchestra for dramatic purposes, and are employed in various ways,

some of which are so familiar that it is barely necessary to mention them. Handel employed a whole chime in a passage in his "Saul," and Mozart used a set of little bells in "The Magic Flute." Meyerbeer has called for a single deep-toned bell to imitate the tocsin of the massacre of St. Bartholomew in "Les Huguenots," and Wagner has used several in "Parsifal." The latter composer has used the carillon (little bells) with fine effect in the magic-fire music of "Die Walküre." The lover of orchestral music needs no special information about bells. They are capable of musical pitch, and their notation is in the treble or bass clef, as the case may be.

The xylophone is sometimes employed in music of an artistic sort. A most excellent example of its possibilities may be found in Saint-Säen's "Danse Macabre," where it is supposed to imitate the rattling of bones in the grim dance of Death.

Score-readers will often find the parts for those instruments of percussion which are without musical pitch, such as triangles, cymbals, bass-drums, etc., written not on a stave, but on a single line. The rhythm can be indicated satisfactorily in this way, and that is all that is needed.

X

Qualities of Good Orchestration

IT is now possible to speak more in detail about those essential qualities of good orchestration to which reference was made at the beginning of this part of the book. Unless I have failed to make myself understood, the reader will be prepared, in applying the principles of orchestration to those works which may come under his attention, to benefit by historical perspective. He will not expect of Haydn or Mozart such richness and complexity of scoring as he will demand and find in the works of contemporaneous composers. The technics of orchestral writing are very thoroughly and widely understood in our day. It is expected, as a matter of course, that every composer shall understand them. Now, this does not purport to be a text-book on orchestration, yet it is desirable that something be said for the information of the amateur of music about the requirements of good orchestration. The object of a volume of this kind

is to help people to enjoy music by pointing out what composers have designed for their enjoyment. The pleasure to be derived from the performance of an orchestral composition must naturally be largely increased when the listener is alert to catch all the varieties of excellence which may be combined in it. Orchestration, as I have already said, does not mean the playing of an orchestra, though the word is frequently misused in that sense. It means writing for an orchestra, and it has certain requirements not always to be found even in the works of the great masters. Schumann, for example, scored very poorly, and some of his works suffer by reason of his inability to clothe his poetic thoughts in the most eloquent instrumental language. Meyerbeer, on the other hand, was a veritable trickster with instruments, and could produce a theatrical effect with a penny-ballad idea, while Berlioz could enchant an audience with no idea at all. Beethoven and Wagner are two of the perfect models of orchestral writing, the former in the classic and early romantic style, and the latter in the fully developed romantic style.

The qualities of good orchestration are solidity, balance of tone, contrast, and variety. By solidity is meant a close warp of the instrumental sounds which does not seem to have

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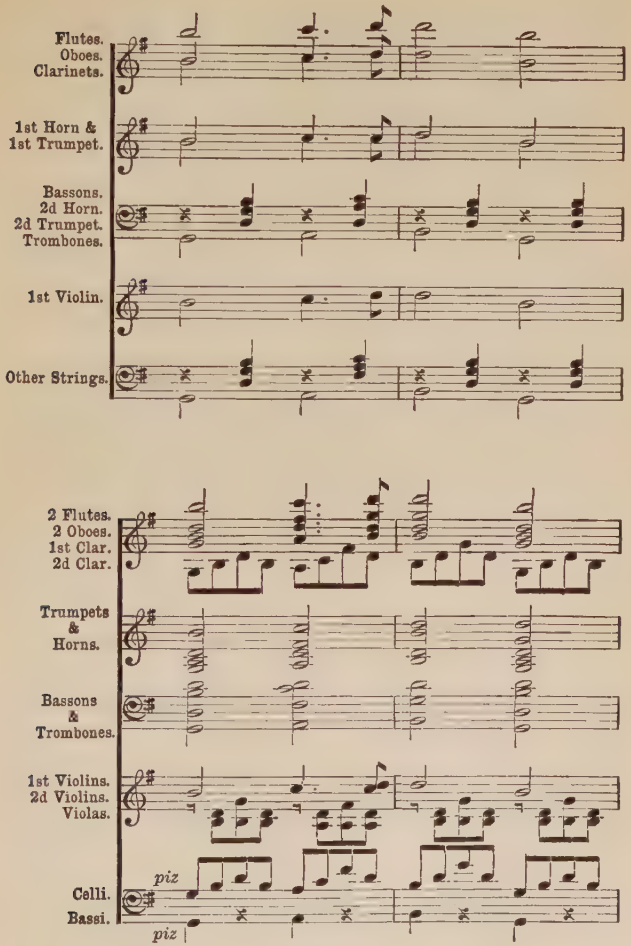
holes in it. A chord played by a full orchestra should sound like the utterance of one great instrument, not like the utterance of a number of individuals. The tones of flutes, oboes, clarinets, bassoons, brass, and strings should blend into one grand body. When such a result is achieved, whether it be with three instruments or one hundred, the tone is said to be solid. If the tone is not solid, it is because the harmony is not properly dispersed. Either the chords are not written in a sufficiently extended form or they are distributed wrongly among the instruments. The first requirement of solidity is good writing for the strings. It is absolutely necessary that their part should be so written that it is capable of independence; that is, it should sound solid when played without the other instruments. The composer must give each note of a chord to that instrument which is best qualified to utter it, and he must write his chords so that they are suited to orchestral enunciation.

Pianists make sad mistakes when they come to write for orchestra, because they try to write in a piano style. They are so accustomed to seeing a melody in the treble clef and all the accompaniment in the bass, that they frequently fail to find any use for their soprano instruments except the utterance of the melody, while

all the barytone and bass instruments grumble a muddy accompaniment, and thus, as musicians say, the orchestra is "all top and bottom." The illustration below will help to explain what I mean. It shows the first two measures of "Home, Sweet Home," scored à la pianist, with the orchestra all top and bottom, and as an orchestral writer would spread it out in full harmony and with just a trifle of instrumental effect in the arpeggio for the second clarinet doubled by the 'celli pizzicati, and the basses also written pizzicati to accentuate the attack of each chord.

Even in writing so simple a thing as this, one must keep in mind always the relative tonal powers of the various instruments. For instance, in the second measure the first trumpet should play the B and then descend to the G, because otherwise it would make the upper D too strong and destroy the effect of the melody. The first trombone should do the same thing. The upper D in each chord should go to the first horn and the first bassoon.

Balance of tone is an expression used to indicate a preservation of the equilibrium of power among the three choirs, so that one shall not be heard too clearly at the expense of another. In most instances this depends upon principles similar to those which govern solidity, but it


Flutes.
Oboes.
Clarinets.
1st Horn &
1st Trumpet.
Bassons.
2d Horn.
2d Trumpet.
Trombones.
1st Violin.
Other Strings.
2 Flutes.
2 Oboes.
1st Clar.
2d Clar.
Trumpets
&
Horns.
Bassons
&
Trombones.
1st Violins.
2d Violins.
Violas.
piz
Celli.
Bassi.
piz

also requires a constant consideration of the sonority of the three choirs regarded as separate bodies. For instance, the wood-wind instruments cannot possibly be played as softly as the strings; hence, if the composer wishes to get a pianissimo effect, he must not write full chords for the wood. Strings, with clarinets or flutes in the lower register, produce an excellent pianissimo. Cornets, on the other hand, cannot play pianissimo along with strings, because their softest tone is louder than that of the strings, and the balance is destroyed. Balance of tone, when all the instruments are playing together, is largely dependent upon the judgment of the conductor. He should see to it, for instance, that his brass instruments do not play too loudly. But it is also a matter of scoring, and frequently a conductor is helpless in the presence of the written page. In the scherzo of Schumann's E flat symphony there is a passage in which the first theme is given to the clarinets, bassoon, second violins, violas, and 'cellos, while the first violins, trumpets, and horns play chords above them. All are directed to play mezzo-forte, and the result is that the brass chords quite overpower the melody. A similar passage is to be found in the andante of Beethoven's Fifth Symphony. No conductor can get a perfect balance of tone out of such passages.

Contrast is obtained by employing instruments of different tone-quality to play the principal parts at different times. A principal melodic idea may be introduced by a trumpet or a clarinet, and continued by flutes or oboes, and finally sung by all the first violins. Sometimes the wood-wind plays alone, to be succeeded by the strings. These alternations of tonal color produce contrasts, without which the richest and most solid scoring might become monotonous. Variety is the result of mixing the tonal tints. For instance, some passages will be written for two flutes, two horns and strings; presently all the strings cease to sound except the first violins, which chant the melody supported by a harmony of brass; now the tone of the clarinets mingles with that of the violins, and the combination of the two produces a new color. Variety is also obtained by giving melodic fragments, not essential parts of the melody, to some of the instruments not engaged in voicing the principal theme. As the author has had occasion to say elsewhere:

"A great many persons do not hear anything definitely except the principal melody, while beautiful bits of counterpoint and exquisite effects of harmony are lost to them because they have not learned how to follow the many voices of an orchestra. Every person should

acquire the habit of ear-analysis. The amount of pleasure added to the hearing of a symphony by ability to hear all the instruments at once is what might be added to the delight of seeing a painting if the power to perceive the colors were given to one who had before noticed only the drawing."

The student of orchestral music will find great solidity and balance of tone in the works of the early masters. Bach's writing is always substantial, but there is no large amount of contrast and variety in it. This is partly owing to the lack of instruments and partly to the meagre technical resources of those wind-instruments which he had. The oboe was Bach's mainstay as a wind voice, and its range of expressiveness, of color, of dynamic gradation, and of agility, is small. The wood-wind choir could not reach its full measure of usefulness till it had acquired the clarinet, which has within itself a considerable range of tone-color, is a far more agile instrument than the oboe, and possesses in a far higher degree than any other wood-wind instrument the power of increasing and diminishing the volume of tone. It is, indeed, as Berlioz has said in his enthusiastic style, the true dramatic soprano of the orchestra. "This beautiful soprano instrument, so ringing, so rich in penetrating accents, when

employed in masses, gains, as a solo, in delicacy, evanescent shadowings, and mysterious tenderness what it loses in force and powerful brilliancy. . . . It is the one of all the wind-instruments which can best breathe forth, swell, diminish and die away its sound."

Without the clarinet, however, Bach and Handel accomplished much with the means at their command. Witness the former's lovely piece of writing for a horn and two bassoons in the "Quoniam" of the famous mass in B minor, and the latter's admirable coloring with even strings alone, as in "Angels ever Bright and Fair," and "Suddenly There was Round About Him a Multitude." The possibilities of coloring increased as new instruments came into use, and the clarinet was at once appreciated by Mozart, who may be said to have made the first systematic attempts at specific tone-coloring.

The completion of the wood-wind choir by the introduction of the clarinet gave needed freedom to composers. Haydn in his old age advanced beyond Mozart in tone-coloring, while Beethoven, who, as I have shown, had a special feeling for the individuality of instruments, developed the features of contrast and variety far beyond anything which his predecessors had conceived. Weber's orchestral

technic is immense. He understood thoroughly all the requirements of good orchestration, and to this day his works sound full, sonorous, and brilliant, even when heard at concerts where the most recent products are displayed. With Weber, the romantic movement, of which I shall have more to say hereafter, was fairly launched, and its representative composers have all employed every resource of contrast and variety without neglecting solidity and balance of tone. Brahms is one of the moderns who did not master the technic of orchestration. He wrote heavy chords low in the bass in his piano music, and he carried this practice into his orchestration, with the result that his scoring is almost always thick and heavy in the middle voices. Wagner, on the other hand, knew how to write deep, sonorous basses without disturbing the clarity of his work. Most of the French composers score beautifully. In all the field of opera there is not a warmer or more delicately refined score than that of "Faust," while M. Saint-Säens's orchestration is at once the model and the despair of young composers.

Amateurs of music will find, as they advance in the study of scores, that every composer has a distinct style. For instance, Tschaikowsky wrote much that was weird, sombre, or melancholy, and the music-lover will find that he

made extensive use of the upper register of the bassoon (and, indeed, of its whole scale), of the low notes of clarinets, and of the English horn to aid him in producing a gloomy, dry color. Liszt's instrumentation is always rich and heavy; Dvorák's always strong, clear, and bright. Beethoven has little peculiarities, such as doubling a melody in the lower octave with a bassoon. Meyerbeer is fond of queer combinations, such as English horn and piccolo. Richard Strauss writes staccato chords for trumpets, and makes horns do things which fifty years ago would have been deemed impossible. But the fundamental principles of orchestration cannot be violated by any writer with impunity, and the student will find these principles epitomized and amply illustrated in the nine symphonies of the supreme master of symphonic composition, Ludwig von Beethoven.

XI

Qualities of Orchestral Performance

PERHAPS the first requisite for good orchestral performance should be set forth as good instruments. It is not too much to say that some orchestras are seriously injured by the presence of half a dozen vulgar-toned fiddles among the violins, by a very yellow clarinet among the wood, or a blatant cornet where a mellow trumpet ought to be. This is seldom the case in a regularly maintained concert orchestra, yet it does happen sometimes even there. The New York Philharmonic Society suffers a good deal from this cause. The orchestra is the society, and many of its members never play in any artistic concerts except those of the organization. They have poor instruments, which do not aid in the production of a noble tone, such as should come from an orchestra of this kind. Again, there are individual players whose peculiar faults are displayed to the general disadvantage of an orchestra. The concert-master (leading first violin) of a certain

New York orchestra cannot play in tune and has a vicious style of bowing. The first oboe of the same orchestra has a peculiar tone, which robs his instrument of its individuality and makes it resemble a clarinet. A well-known solo horn player produces from his instrument a tone which sounds more like that of a valve trombone or a euphonium than that of a French horn. Such individual faults injure the general effect of an orchestra's playing, though they are not strictly to be classed under the head of qualities of orchestral performance. The requisites of concert orchestral playing are the following:

Quality, solidity, and balance of tone; precision, unanimity, flexibility, and light and shade.

The quality of tone which proceeds from an orchestra should be smooth and mellow. It should never be possible for the audience to hear the rasping of stringed instruments, nor the gasping of brass ones. The tone of an orchestra should be capable of growing to its full power without pantings. It should always flow freely and with liquid purity. It should never reveal its own mechanism. One should never be able to detect the scraping of the bow which makes the fiddle speak, nor the vibrating of the reed in the throat of the clarinet. The tone of a great orchestra should come forth spontane-

ously and without apparent effort, as that of a great singer does, filling every cranny of the auditorium and seizing upon the heartstrings of every hearer.

And it should have solidity, which is easier to hear than to describe. One knows at once when the tone sounds thin and anæmic and when it sounds healthy and full-blooded, but it is not easy to point out the peculiarities of this quality. Sometimes an orchestra's tone is not solid because there are too few players for the demands of the auditorium. Sometimes it is because the instrumentalists are not playing exactly together, and the vibrations of each tone of the melody, as caused by say a dozen violins, are not isochronous. Again, tone lacks solidity at times because the individual performers are not capable, and it is frequently, like want of quality, due to poor instruments.

Balance of tone has the same meaning in performance as it has in orchestration. It is equality of dynamic force among the constituent parts of the band. As already said, it is the result partly of good orchestration and partly of the guiding skill of the conductor; but it depends also in a measure upon the constitution of the orchestra. The average theatre orchestra is an eloquent demonstration of the bad effects of poor balance among the instruments.

The desperate struggles of two first violins, one second, one viola, one 'cello, and one double-bass to produce sufficient sound to make themselves heard in forte passages against the sonorous pealing of a cornet, a trombone, and a pair of tympani, are as vain as they are ridiculous. Such efforts are repeated on a larger scale when modern symphonic music is performed by an orchestra whose strings are led by six first violins. It is not possible for six firsts, six seconds, four violas, three 'cellos, and three double-basses to maintain a proper balance of tone against two or three flutes, two oboes, two bassoons, four horns, two trumpets, three trombones, a tuba, and tympani. An orchestra with six first violins should not attempt music orchestrated in the romantic style. It would be much better for such an orchestra to omit two horns and add two violins, and confine itself to music suitable to such an array of instruments. When there are only six first violins it is not wise to attempt works which call for divisions of those six into four parts. It is always absurd to hear an orchestra with three 'cellos trying to "fake" the opening measures of Rossini's "William Tell" overture, and in the tutti the trombone rages like a lion. It is generally conceded in this country that a concert orchestra requires about 60 stringed instruments to give

a proper balance to the wood and brass. I have already spoken of the constitution of the Boston Symphony Orchestra, which has 58 strings on a basis of 16 first violins. The Chicago Orchestra has 61, and the New York Philharmonic Society, 78. The London Philharmonic has 54, the Vienna Philharmonic, 68, and the Paris Conservatoire, 60.

Given a proper array of instruments, the preservation of balance of tone is due chiefly to the conductor, though it is also necessary that the players should not be troubled with individual ambition. The occasional solo affords the individual player an opportunity to display his powers, but at all other times he should be content to sacrifice his glory for the general result. A good orchestra is in this respect like a perfect boat-crew; every man in it should be part of a machine to produce a single effect. Whenever one man in a boat-crew is seized with a notion that he can pull the whole boat himself, the crew goes to pieces and loses the race. So in an orchestra, if the second trombonist, for example, is convinced that the audience ought to hear his part, he destroys the balance of the performance and oversets the composer's purpose. Of course, a conductor must do all he can to see that the ambitious second trombonist does not mis-

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behave, but it requires a real *esprit de corps* in an orchestra to maintain an ideal balance of tone. Brass is blatant in forte passages if allowed to have its own way, and wood, unrestrained, is frequently too strong in moderato or piano bits.

Plenty of strings is the only remedy for a bad balance which careful playing will not correct, and a plenty of strings is to be found only in large concert orchestras. Even in opera-houses the strings are often too few, while in theatres they nearly always are. The average theatrical manager knows very little about music and cares less. A business manager who knew something of the tone art was once engaged by a manager who controlled a travelling exhibition of "Midsummer Night's Dream," with all Mendelssohn's music. He thought his exhibition worthy of the attention of the metropolis, but the business manager said to him:

"If we go into New York, we'll have to increase the orchestra."

"What for?" replied the manager. "We have all sorts of instruments now, haven't we?"

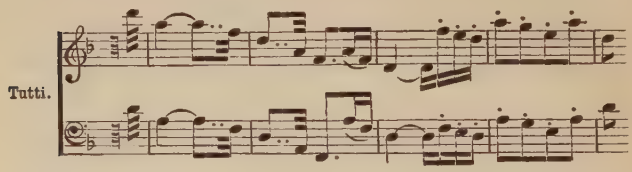
"But we ought to have more first violins."

"What! more than *two?*"

But, after all, the theatre is hardly the place to look for art in music. The concert-hall and the opera-house are its homes, but owing to

the conditions which surround the performance of opera in most places, only the concert orchestra can be expected to show the highest possibilities of performance. In such an orchestra we may expect to find a proper distribution of instruments, and having that, we should demand a perfect solidity and balance of tone. I can hardly put too much emphasis on the necessity of good tone. Although the mere quality of sound belongs to the lowest department of musical excellence, the sensuous, it is nevertheless an instrument of the greatest power in the presentation of musical thought. There is something vital in a noble tone, something enthralling and inspiring. One recognizes it immediately when it is the voice of a distinguished singer, and I have seen audiences moved to amazing enthusiasm by a glorious voice which had neither dramatic intelligence nor vocal cunning to aid the potent spell of its pure quality. An orchestra should be a mighty singer in every sense, and it must have the first requisite of one — a fine voice. There should be nothing cheap or vulgar in its tone. It should be one grand flow of gorgeous, all-surrounding sound, smooth, sweet, mellow, and pure, whether heard in the aërial whisper of the last bars of the "Lohengrin" prelude or the thunderous peal of the "Kaisermarsch."

Tone being assured, the next traits of vital importance in orchestral performance are precision and unanimity. Precision is a feature of attack, while unanimity refers to those parts of a passage not included in the attack. Both are dependent upon the elementary business of keeping together. If the players of an orchestra are not at all times absolutely at one in their work, there can be neither precision nor unanimity. Precision is keeping absolutely together in beginning and finishing, whether it be a detached chord or tone, or a phrase. Unanimity is keeping together, in time and force and all other requirements, between the beginning and the end. The act of commencing a tone is called the attack. This should be so precise that the tone seems to be produced by a single instrument, not by a number. If it is a detached tone, or a phrase like that at the beginning of Beethoven's C minor symphony, every instrument engaged in its utterance should cease to sound at exactly the same instant. Precision is a matter in which many auditors are deceived. I well remember how I gaped in wonder in my boyish days when I heard an orchestra under Theodore Thomas play a series of staccato chords with such precision that they came out like the cracks of a whip. I have since learned that this is one of the easiest

feats of an orchestra. It is a far greater test of precision to play with absolute sharpness and clearness of cut a passage such as this from the Ninth Symphony :

Furthermore, precision is just as necessary to the correct performance of flowing cantabile passages as it is to those of vigorous declamatory style. It belongs to the general department of accuracy, and without accuracy in such features as the duration of sounds, no orchestral playing can have color, force, or finish.

Unanimity, as I have said, means keeping together in matters other than the beginning and ending of a tone or phrase. Attention has been called to the fact that if the notes of a melody and its harmonies are not played in exactly the same time by all the instruments engaged in their performance, the quality of tone is seriously impaired ; but it must now be added that further injury comes in the shape of destruction of the outlines of the rhythm. This is such an important factor in all music that to decrease its clearness is like blurring

the outlines of a drawing. When the rhythm of an orchestral composition or the outlines in a painting are destroyed, there remains nothing but a blurred color-scheme. A color-scheme is often very pretty, but it is no more a composition than the view in a kaleidoscope is a landscape.

Unanimity, furthermore, includes something beyond mere clearness of enunciation. It embraces also accent. In such a phrase as that quoted above from the Ninth Symphony, there are a series of natural accentuations, and it is essential to a brilliant and stirring utterance of the phrase that every instrument in the orchestra should put the accents in the same places and give them the same amount of force. In passages which are not written for the whole orchestra there should be unanimity in accent among those for which they are written. In fact, an orchestra should have absolutely military accuracy in all its work, and this presupposes long and arduous drill and extended association. Permanency is a necessity to fine orchestral work. Men who have played together a long time, even under an inferior conductor, will play with much more precision and unanimity than men newly brought together under the beat of a famous director. The highest results are attainable only with a

permanent orchestra under a competent conductor.

But with all this precision and unanimity the playing of an orchestra should be flexible. As I have said in another volume, "The music should never sound rigid, but should seem to come in a sinuous stream of purling sound." The average concert-goer would probably describe the playing of an orchestra deficient in flexibility as "stiff," and that is a very expressive way of putting it. It will be remembered that in "H. M. S. Pinafore" the only person who was invariably right was *Dick Deadeye*, but everyone applauded *Buttercup's* assertion that he was "a little triangular." An orchestra must always be correct, but it need not be triangular. Inflexibility is usually the result of bad conducting.

A martinet, with phlegmatic temperament, can make an orchestra play as inflexibly as a street piano. A conductor of excessively melting temperament will often melt his orchestra so that its playing will be as sweet, as flexible, and as limp as hot taffy.

And this brings us to the all-important question of light and shade. The fundamental element of light and shade is the distribution of force and speed. An orchestra is capable of a pianissimo, which is like the softest whisper of

a summer evening's breeze, and of a fortissimo, which is like the booming of a thunder-storm. There is an infinitesimal scale of gradations between these two extremes, and these should all be properly employed. Of course, their use is guided by the conductor, but they form a part of the technics of orchestral playing, and hence must be described here. All lovers of music know what effects are brought about by skilful use of alterations of tempo—the accelerando and ritardando—and by the combination of these with gradations of force. In the application of these devices an orchestra should be adept. The placing of the effects is, of course, indicated in the score, or, if not, must be the result of the judgment and taste of the conductor; but the manner of producing them is the work of the performers. It requires frequent rehearsal to get these effects made with precision, unanimity, and smoothness of tone, yet they should be so made. An orchestra should sing like a great singer, and it should be able to produce all the delicate shades of song as a human voice can.

But an orchestra has many voices, and the composer often takes advantage of this fact. He frequently calls upon his instrument to sing several melodies simultaneously, or, as in the case of a fugal work, different parts of the same

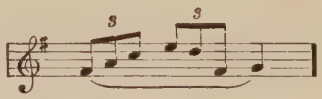
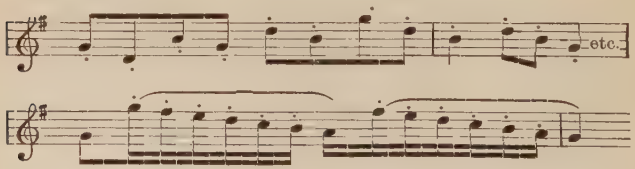
melody at the same time. This kind of writing calls for a distinct delivery of the middle voices. Even in compositions which are not polyphonic, there are often subsidiary melodic fragments in parts other than those which are playing the principal theme. These fragments should be heard; composers do not write them by accident. They should blossom out spontaneously as exuberant exfoliations of the harmonic garden. They should not be thrust obstreperously in the faces of the auditors, but they should not be permitted to escape notice. The middle voices are sadly neglected at times. Some conductors seem to confine their whole study of a score to hunting for the principal theme and bringing that out, while the delicious bits of counterpoint, which the composer has been at no small pains to devise, are left to take care of themselves. Such conductors remind me of a professional musician who was engaged in a discussion of Richard Wagner in the corridor of the Metropolitan Opera House, while inside the orchestra was playing the vorspiel to "Die Meistersinger."

"It is a pity," said this wise man, in a condescending manner; "but Wagner knew absolutely nothing about counterpoint."

And at that very instant the orchestra was singing five different melodies at once; and, as

Anton Seidl was the conductor, they were all audible.

Light and shade, as we roughly call them—the German "nuancirung" (nuancing) is far better—depend also on phrasing. In singing, phrasing means the division of the melody into groups of notes, so that breath can be taken. Now, phrasing is obviously quite as vital to wind-instrument players as to singers, because the former, too, must have intervals to take breath. Obviously, if the several players stop to take breath, they should cease to sound their instruments at the same instant, and begin again with equal precision. A similar grouping of notes is made in the performance of bowed instruments by the movements of the bow. All violin-players know that there is a difference in the results produced by the up-stroke and those by the down-stroke. Phrasing in the orchestra, then, is the technical treatment of the natural groups of tones which form the component parts of a melody in such a way that they shall come out clearly and symmetrically and in a vocal style. Here again we come upon the technical part of a conductor's work. It is he who regulates the phrasing. The distribution of up and down strokes of the bow is in a general way left to the concert-master, the leader of the first violins, but he is, of course, subject to

the direction of the conductor. Many composers of the present day mark the bowing in particular passages, but most of them content themselves with indicating such things as slurred notes and staccati, or special effects, such as playing near the bridge, or with the point of the bow. The legato of stringed instruments is indicated in a score by a curved line drawn over or under the passages, thus:

Detached notes are indicated by dots, while lightly detached ones, to be played with a single stroke, are indicated by dots with a slur, or legato mark, over them, thus:

All these details of bowing and of breathing in the wind-instrument choir should be carefully regulated. They are elementary parts of the technic of orchestral performance, and they contribute to the production of smoothness, elegance, and refinement in the playing of a band,

as well as to force, brilliancy, and expression. Furthermore, all demands of the composer in regard to the use of particular instruments or the uncommon treatment of instruments should be respected. If the result is bad, it is the composer's fault. But it is usually good. When *Hans Sachs*, in "Die Meistersinger," makes *David* a journeyman cobbler, he smacks the boy's ear with his broad hand, and Wagner imitates the ringing in the offended member by the whizzing note of a stopped horn. To play that note unstopped would be to defeat the composer's intention. It would be equally wrong to neglect to put mutes on where directed to do so. Sometimes composers call for very curious performances, but their wishes should be respected as far as possible. For instance, in his "Lelio, ou le retour à la vie," Berlioz has written a passage for clarinet "con sordino," and has directed that the instrument should be muted by being "wrapped in a bag of cloth or leather." His desire was to give the clarinet a veiled and distant sound, and his wishes should be carried out. In another place Berlioz calls for tympani drumsticks with heads of sponge. Wagner calls for tenor tubas in the funeral march of "Die Götterdämmerung," and Mozart calls for a mandolin to accompany *Don Giovanni's* "Deh

vieni." Such requirements should always be fulfilled, and so should all directions as to the manner of performance.

We are in the habit of thinking that what may be called the virtuoso orchestra is a product of our own time, but perhaps we flatter ourselves. It is very certain that the orchestra of the Paris Conservatoire played with splendid precision and with much fire half a century ago, and there are other orchestras in Europe which have to live up to some pretty old traditions. It was only last September (1898) that the Dresden Court Orchestra celebrated its three hundred and fiftieth anniversary. To be sure, when it was established by the Elector Maurice it was a singing choir, whose members learned to play instruments in order to supply accompaniments; but it developed into an orchestra, and as such it helped to produce Heinrich Schütz's "Seven Last Words of Christ," and his "Daphne," which was the first German opera. The Esterhazy orchestra, under Haydn, was no mean band, and the famous Mannheim orchestra, under Stamitz, revealed possibilities of performance which did much toward forming Mozart's symphonic style. The Leipsic Gewandhaus orchestra dates back to 1743, when it numbered sixteen players and gave its concerts in a private house. These

concerts were interrupted by the Seven Years' War, but were resumed in 1763 with an orchestra of thirty. The first concert in the new Gewandhaus rooms took place on September 29, 1781. Since that time the seasons have been regular. Mendelssohn was the conductor from 1835 to 1843, and Neils W. Gade from 1844 to 1848. The development of style and technic in the performances of this orchestra had very considerable influence on the advance of orchestral playing throughout Europe. Other notable German organizations are the Berlin Philharmonic Orchestra and the orchestra of the opera at Munich. The Vienna Philharmonic is celebrated for its strings.

In France the progress of orchestral playing received its first impetus from the labors of François Joseph Gossec (1733–1829), whose extraordinarily long and active life enabled him to see not only the blossom, but some of the early fruit of his efforts. He was the first French composer of symphonies, and in 1770 founded the "Concert des Amateurs." He did much toward developing good orchestral playing in Paris, and prepared the way for the famous François Antoine Habeneck (1781–1849), who, in 1828, founded the "Société des Concerts du Conservatoire."

Orchestral playing has never reached a high

plane in England, but the London Philharmonic Society has an important history because of the famous works written for it, among them symphonies and overtures by Cherubini, Spohr's second symphony, Beethoven's Ninth Symphony, and Mendelssohn's Italian symphony. In America orchestral performances have always been popular since the foundation of the New York Philharmonic Society in 1842. The labors of such admirable conductors as Theodore Eisfeld, Carl Bergmann, and, most of all, Theodore Thomas, did much to develop a high degree of skill among orchestral performers and a wide appreciation on the part of the public. The debt of the country to Mr. Thomas is one that it will carry to the end of its musical development. The foundation of the Boston Symphony Orchestra, in 1880, by Colonel Henry L. Higginson, of Boston, gave the United States its first concert orchestra established on a permanent basis, and the organization has come to be regarded as one of the leading orchestras of the world. The Chicago Orchestra, directed by Theodore Thomas, is its only rival in America.

Nothing more excellently pictures the conditions under which an orchestra comes to the perfection of its work than a few words in one of Schumann's comments on music in Leipsic:

From a photograph by Falk.

THEODORE THOMAS.

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"Before we take leave of the Gewandhaus concerts for half a year," he says, "we must award a crown of merit to the forty or fifty orchestral members. We have no solo-players like Brod in Paris or Harper in London; but even these cities can scarcely boast such fine, united playing. And this results from the nature of circumstances. Our musicians here form a family; they see each other and practise together daily; they are always the same, so that they are able to play a Beethoven symphony without notes. Add to these a concert-master who can conduct such scores from memory, a director who knows them by, and reveres them at, heart, and the crown is complete."

PART III

How the Orchestra is Directed

XII

Development of the Conductor

IT is not so easy to define the functions of the conductor of an orchestra as it may seem to be, because at present there is a general tendency to exaggerate one element of his labor, namely, the interpretative. "Readings" are the order of the day, and we are invited to consider Mr. Paur's reading of Beethoven's C minor symphony, Mr. Nikisch's interpretation of the same, and again Mr. Gericke's, and to compare them one with another, as we might compare Mr. Barnay's performance of *Hamlet* with that of Wilson Barrett. The conductor's magnetism, his personality, his style, even the cut of his cuffs have thrust themselves between the public and the immortal works of the masters, until it seems as if there must come a reaction which will drive us back to the ancient time-beater. Perhaps it will be advisable, before considering conducting in the abstract, to trace briefly the development of the conductor.

It is impossible to tell when the conductor made his appearance in music. There seems to have been the widest diversity in the customs of different places and different times. In modern music, which may fairly date from the time when vocal and instrumental composition started upon lines of independent development, namely, at the beginning of the seventeenth century, the conductor was at first nothing more than a leader. He was one of the performers whom the rest followed. His function is preserved to-day by the leader of the college glee-club. Yet long before the year 1600 there certainly were conductors who used the baton. An ancient manuscript in a Parisian library contains an illustration (which the reader will find reproduced in Emil Naumann's "History of Music") showing Heinrich von Meissen, a minnesinger who died in 1318, conducting a choir of singers and players. He is seated on a raised platform and is using a long baton in his left hand and the extended finger of his right. His attitude and facial expression clearly express his intent to guide those below him, or correct someone who is going astray. Two or three of the figures in the choir seem to be repeating his beat.

What became of conductors of this kind between 1318 and 1600 I have been unable to

discover. The early operatic performances in Italy, however, were conducted by the harpsichordist, who played the chords sustaining the dry recitative and led the rest of the performers in the orchestral passages. This method of conducting followed Italian opera into Germany and France. Lully's works were conducted in this manner, and when young Pelham Humphreys, one of the gentlemen of the King's Chapel, returned from his studies in France, "a young monsieur," as Pepys notes, and made fun of the performances of his former companions because they could not keep time, he must have shown them how his master, Lully, conducted. At any rate, the conducting of operatic performances at the harpsichord was common in the time of his pupil, Purcell, and when Handel, who had been writing Italian operas for the Germans, went to London, he, too, conducted his own works while sitting at the harpsichord. Heinrich Schütz must certainly have learned this method of conducting when he went down to Italy to get the score of Peri's "Daphne" for the delectation of the Dresden court, even if he had not known it before. This would account for the introduction into Germany of the Italian method of opera conducting, and it was continued, of course, at Hamburg under Reinhard Keiser and afterward under Handel. Suf-

ficiently numerous pen-pictures of Handel have come down to us, and we know that he conducted the performances of his operas in Germany sitting at the harpsichord.

How did these harpsichordists conduct? Undoubtedly, sometimes with a nod of the head, sometimes with a wave of the hand, and occasionally, perhaps, with a most emphatic stamp of the foot. Not a little light is thrown upon the various methods of conducting by the records of the practices of the church musicians. It appears that even in the days of Handel and Bach there were different ways of conducting church music. Johann Bähr, concert-master at Weissenfels, says, in a book published in Nuremberg in 1719, that "one man conducts with the foot, another with the head, a third with the hand, some with both hands, some again take a roll of paper, and others a stick." It is perfectly clear, from other remarks of Bähr, that these different methods were applied to different kinds of performances. A Nuremberg engraving, published certainly before 1725, shows a music-conductor with a roll of music in each hand directing the performance of a motet from a score. There is an inscription in verse which shows very plainly that this was a real conductor. "Silent myself, I cause the music I control," is one of the lines whose mean-

ing is not doubtful. There are other pictures, of about the same date, which show the church-music conductor standing in the midst of a group of singers and players in front of the organ and directing with a roll of music. In some cases the leader of the choir used a violin, with which he could keep the singers on the pitch.

But it seems as if the quiet style of conducting at the harpsichord, as practised in the opera-houses, must have commended itself to the German church musicians as eminently suited to the sanctuary, for, after 1730, the conductors of sacred music ceased to stand and beat time continually. The custom of conducting all kinds of performances from the harpsichord spread. Sometimes the time was indicated by motions of the hand, at others by the sound of the instrument. Thus, in Germany, undemonstrative harpsichord conducting became popular, while in ever-theatrical France, where the eye must always be fed, the practice of conducting with the baton became general. This led to the scathing remark of Rousseau: "The Opera in Paris is the only theatre in Europe where they beat the time without keeping it; in all other places they keep time without beating it." The influence of Hasse's conducting of the Dresden orchestra had much

to do with the common adoption of the harpsichord method in Germany. In the diagram of the Dresden orchestra given in Chapter XV. the reader will see that there were two harpsichords. The conductor sat at the one in the centre; the player who performed the figured bass part sat at the other.

In his famous "Life of Bach," Dr. Philip Spitta, to whose indefatigable labors of research I am indebted for the above information as to methods of church conducting, says: "When Bach entered on his duties he had the harpsichord in the Thomaskirche [in Leipsic], which had become useless, set in order forthwith, and got the Council to expend the sum of six thalers a year upon keeping it regularly tuned, but it was out of use again in the year 1733." In regard to the use of the harpsichord for conducting, Dr. Spitta quotes the words of Bach's son, Philipp Emmanuel, who wrote:

"The notes of the clavier [the German name for any instrument of the piano family], which stands in the middle, surrounded by the musicians, are clearly heard by all. For I myself know that even performances on a large scale, where the performers are far apart, and in which many very moderate musicians take part voluntarily, can be kept in order simply by the tone of the harpsichord. If the first violinist stands,

as he should, near the harpsichord, it is difficult for any confusion to ensue. . . . If, however, anybody begins to hurry or drag the time, he can be corrected in the plainest possible way by means of the clavier; while the other instruments have enough to do with their own parts because of the number of passages and syncopations; and especially the parts which are in tempo rubato by this means get the necessary emphatic up-beat of the bar marked for them. Lastly, by this method—since the musicians are not hindered by the noise of the clavier from perceiving the slightest nuances of time—the pace can be slightly lessened, as is often necessary; and the musicians who stand behind or near the clavier have the beat of the bar given out in the most evident, and consequently the most emphatic, way before their eyes by both hands at once."

These words are singularly enlightening as to the exact methods and advantages of harpsichord conducting, and they go far toward explaining the reasons why this method survived as long as it did. It continued to be used, as we shall presently see, long after the time-beater had become a fixed institution and even in conjunction with his work. Undoubtedly, this was because the older orchestral players had become so thoroughly schooled to follow the

harpsichordist that they could not be induced to give their whole attention to the time-beater and the counting of their own rests. Gradually, however, as the wind choir of the modern orchestra increased in power, the harpsichord was unable to make itself heard, and it had to give way to a method of conducting which appealed wholly to the eye. It was doubtless owing to the continued existence of old musicians trained in the early school that for a time the harpsichord and the baton were employed simultaneously. It is not at all unlikely that in some instances a distinguished composer, whose work was undergoing the ordeal of a first hearing, was invited to sit at the harpsichord, where he pretended much and did little, while his presence added to the interest of the public, and someone else really conducted the performance with a baton. The first violin, too, played an important part in the conducting of an orchestra, so much so that to this day he is known either as the concert-master or the leader, although his functions have wholly changed.

At one time he was the only conductor that some orchestras had. Part of the time he played, leading the others by the motions of his bow and by raising and lowering the neck of his violin on the beats. Again he would cease

to play and conduct with the violin bow. He was known as the leader of the orchestra, and his descendant exists in the contemporaneous theatre, where the first violinist of the little orchestra of eight or ten pieces is the leader. Some concert-goers will doubtless recall the fact that both Johann and Eduard Strauss conducted their dance-music in this manner.

In Haydn's day the performance of symphonic music enlisted both harpsichordist and time-beater, and at the famous London concerts for which the genial master composed some of his best symphonies, he himself sat at the harpsichord, while Salomon, the manager of the entertainments, beat time. That a similar method should have been employed in the performance of vocal works even in the present century is not surprising, but we must bear in mind that it was applied to compositions whose scores contain no clavier parts. At Vienna, in 1808, Haydn's "Creation" was performed with Kreuzer at the harpsichord and Salieri conducting. In 1815 Beethoven's "Mount of Olives" was given in the same city with Umlauf at the piano and Wranitzky conducting. At the Berlin Singakadamie Zelter used to beat time while one of his pupils was at the harpsichord. The practice of conducting from the piano, even without the time-beater, clung tenaciously to

life, for it is on record that Mendelssohn, at a concert of the London Philharmonic Society in the Argyll Rooms, on May 25, 1829, conducted his symphony in C minor from a piano. It may be as well to note here that the eminent composer, Ludwig Spohr, in 1820 introduced the modern manner of conducting in England. He stood at a desk at the front of the stage and directed with a baton. He describes in his autobiography the general opposition of the Philharmonic musicians which he had to overcome in order to begin this practice. "Henceforth," he says, "no one was ever again seen seated at the piano during the performance of symphonies and overtures." He was not informed of Mendelssohn's piano conducting.

We have now come to the period when the mere time-beater began to give way to the interpreting conductor, the director who invites you to consider his especial "reading" of this or that work and be wise. Before we leave the time-beater, however, let me remind the reader that his function is by no means to be despised, and in the case of some suave and gentle classical works it would be well if he presided over the performances of some of our present orchestras. Berlioz has said: "The talent of the beater of time, without demanding very high musical attainments, is nevertheless sufficiently

difficult to obtain; and very few persons really possess it. The signs that a conductor should make—although generally simple—nevertheless become complicated under certain circumstances by the division and even the subdivision of the time of the bar." Berlioz has given us, in the concluding chapter of his admirable work on orchestration, an essay on the art of the time-beater, which is well worth reading. It is sufficient to say here that the old-fashioned time-beater's work was complete when he indicated the correct tempo, and plainly marked the beginning and necessary subdivisions of each bar.

When the composer conducted his own works, as was so often the case in the earlier days of symphonic music, there was no need of an interpretative conductor. But when the composer had long passed from the land of the living and the traditions of his readings had become obscured, or when his works were to be introduced in a foreign country—as in the case of Beethoven's symphonies in France—the interpretative conductor became a necessity. Furthermore, when the art of conducting began to be recognized as a specialty, it was conceded that composers were generally poor conductors of their own works, and the orchestral director became a distinct species.

Hector Berlioz, for example, could not play any instrument save the guitar, and Richard Wagner was only a very poor pianist; yet both were admirable conductors.

The interpreting conductor came into existence in the early part of the present century. It cannot be said that any one man was the first representative of the species, but rather that it was one of the first-fruits of the romantic movement, that healthy renaissance of musical emotion. Both German capellmeisters and French directors had occupied themselves wholly with the regulation of the technics of the orchestra, and if the tempo was about right and the instruments kept well together and gave the broader effects of light and shade, they were satisfied. But two or three progressive conductors insisted upon further refinement of orchestral performance.

Johann Karl Stamitz (1719–61), director of the Mannheim orchestra, and François Joseph Gossec (1733–1829), founder of the Concert des Amateurs in Paris, were the two conductors who carried orchestral technics up to the point at which genuine interpretative work became possible by reason of the refinement of the means of expression. It was in studying the means of orchestral expression that these conductors gradually approached the questions of

interpretation. As they polished the phrasing of their orchestras, they began to inquire whether they were applying their nuances in the proper places, and so they advanced toward that point at which the interpreting conductor sits down before a score to study out a complete plan of performance deduced from his conception of the intent of the composer. Gossec founded the Concert des Amateurs in 1770 and was himself the conductor. Symphonies by Toeschi, Vanhall, Stamitz and other composers were produced, and the conductor had at any rate to decide the tempo and place the broader dynamic effects according to his own conception, for these matters were not carefully marked in the scores as they are now.

Before Gossec's death the modern interpretative conductor had made his appearance. Spohr, Mendelssohn, and Weber were early representatives of the species. All three of them occupied at different times posts of the highest importance in the department of conducting. Spohr at Cassel, Mendelssohn in the Leipsic Gewandhaus, and Weber at the Dresden Opera were, without doubt, interpreting conductors. They advanced without hesitation beyond the mere study of orchestral technics to the study of the correct style and feeling in the performance. Spohr was an enthusiast on the subject

of Mozart's music, and he conducted Mozart's symphonies according to his own ideas. Weber revived old German operas and treated them as he believed their composers would have treated them. Mendelssohn was the resurrector of Bach's Passion music, which had lain buried for a century, and he was not silent as to his conception of its proper performance.

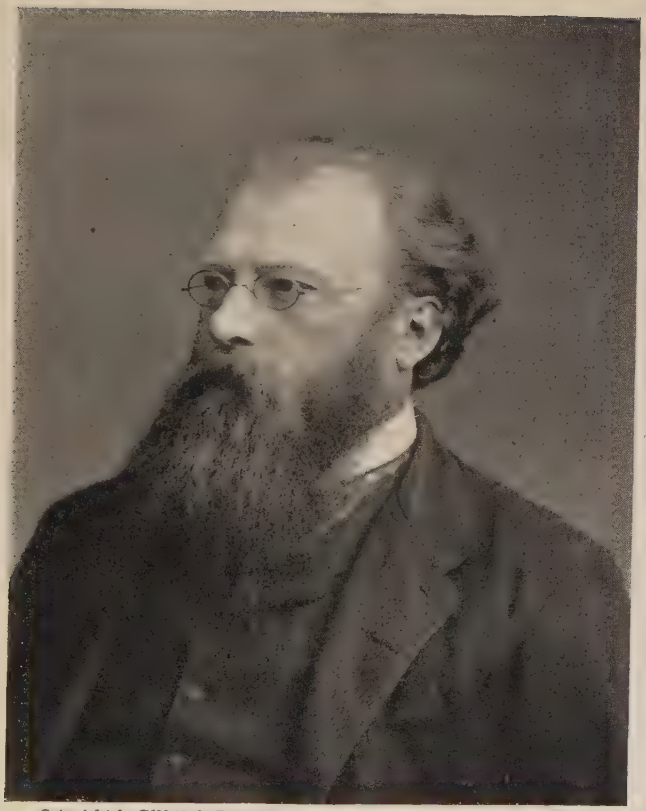
The most conspicuous figure among the early interpreting conductors was unquestionably François Antoine Habeneck (1781–1849), the founder of the Société des Concerts du Conservatoire. Habeneck was compelled to be an interpreter. He was a conductor pure and simple. He had no gospel of his own to preach, but he aimed at making the symphonies of Beethoven known in France, and he was thus forced to become an interpreter of the mighty Ludwig's thought. He not only brought the Conservatoire orchestra to a remarkably high point of technical ability, but he conducted Beethoven's music with a force, a sentiment, a nobility of style that carried conviction with it and compelled Paris to acknowledge the genius of the German master. Berlioz, himself a skilful conductor, has rendered homage to Habeneck's powers, and there is abundant testimony that he was the Richter or the Gericke (or whom you please) of his day.

The list of conductors of the Leipsic Gewandhaus concerts shows conclusively that, so far as they were concerned, interpretative conducting began with Mendelssohn. His predecessors were merely good leaders; his successors have all been men of talent, such as Ferdinand Hiller, Julius Rietz, Neils Gade, and Karl Reinecke. In France it is easy to follow the succession of great interpretative conductors. Habeneck conducted the concerts of the Conservatoire until 1848. In 1851 Jules Etienne Pasdeloup founded and conducted the first concert of the Société des Jeunes Artistes du Conservatoire. In 1873 Colonne began his career as a conductor, and in the same year Lamoureux made himself a place. These men are admirable representatives of the genus conductor as known in our day.

There is no doubt that the art of interpretative conducting received a strong impulse in Germany from the work of Richard Wagner, who entered upon his career as a director at the Magdeburg Theatre in the autumn of 1834. It was not so much by his individual labors as a conductor that Wagner aided in the development of the interpreting art as by his fiery castigation of the mechanical and slovenly work of careless capellmeisters, and his luminous words upon the right method of directing orchestral

performances. In the spread of his doctrines he was mightily aided, first by the admirable conducting of Liszt, and afterward by that of Hans von Bülow, without doubt, one of the best conductors who ever set foot on the platform. His readings of Wagner were, of course, authoritative, and his interpretations of Beethoven carried with them so much conviction that they were regarded as equally so. Dr. Hans Richter, who came into prominence in 1875, carried forward the work, and Germany has since produced a number of the most eminent interpreting conductors. Indeed, there can be no question that the best representatives of the class have been and still are German or Austrian, including Hungarian in the latter.

In the United States all the eminent conductors have been men whose early musical nourishment was obtained in Germany. The conductors of the Philharmonic Society of New York began with Theodore Eisfeld, who came into notice in the season of 1849–50. Subsequently he shared his labors with Carl Bergmann, who became the sole conductor in 1865 and remained in office till the close of the season of 1875–76. Mr. Bergmann was an interpreting conductor and a determined advocate of certain advances in music. Once, when he had been giving his hearers a good deal of Wagner, some-



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HANS RICHTER.

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one expostulated with him, saying, "But, Mr. Bergmann, the people don't like Wagner." "Don't like Vagner!" answered Bergmann; "den dey must hear him till dey do!"

Mr. Bergmann's successor was Leopold Damrosch, who conducted the Philharmonic only a year, but left an imperishable record as the founder of the Oratorio Society and the regenerator of German opera in New York. Of the labors of Theodore Thomas and Anton Seidl it is unnecessary to speak. As interpreting conductors they have not been excelled in America in their especial fields. In Boston, Carl Zerrahn, Georg Henschel, Wilhelm Gericke, Arthur Nikisch, and Emil Paur did notable work as interpreting conductors. The tendency in our day, indeed, has been to do a little too much interpreting, and as a result the conductor has too frequently distracted attention from the music to himself. The public, prone to run after a virtuoso of any kind, has readily bowed the knee at the shrine of the baton-wielder, and we have beheld the curious spectacle of people going not to hear Beethoven or Wagner, but Nikisch or Seidl.

XIII

Functions of the Conductor

PERHAPS nothing connected with the orchestra is more completely misunderstood by amateurs than the functions of the conductor. I remember that in the days of a certain distinguished orchestral director there were two of his ardent admirers who always occupied seats in the front row, just a little to his left. There they sat, with rapt expressions on their faces, gazing at the conductor. They never took their eyes off him, and I am morally certain they had finally come to think that the whole of every composition emanated from the swaying end of his baton. They overrated the importance of the conductor, but not so much more than the average concert-goer. The first and radical blunder made by the typical music-lover is in supposing that the work of a conductor is done at the performance. In some mysterious way this man with a stick in his hand is supposed to hypnotize, magnetize, or just vulgarly scare the musi-

cians into playing certain music according to impulses which have just developed in his breast. I have heard people coming out of a concert-room say such things as these :

" I thought Mr. Seidl was very cold to-night, didn't you ? "

" Yes, he was, indeed. That's why I liked Nikisch so much ; he always kept the orchestra on fire."

There is a substratum of truth in all this kind of talk. A conductor of cold temperament will not give highly colored readings, nor will he excite enthusiasm in his orchestra. A conductor of poetic feeling will conduct poetically and he will make his orchestra play so. But neither of them accomplishes his result suddenly and spontaneously at the performance. All that a conductor does at a performance is to remind his players of what he told them at rehearsal. It could not be otherwise, for the beat of the baton and the utterance of the sound by the instruments is almost simultaneous.

To remind the musicians of what he has already instructed them to do, the conductor employs certain pantomimic motions and facial expressions, some of which have been so generally used that they are conventional, while others are, of course, peculiar to the individual.

Everyone knows, for example, that Hans von Bülow was fond of conducting with an eye to effect upon the audience, and that some of his pantomime was comic. In a diminuendo I have seen him stoop lower and lower till he was almost hidden behind the music-stand, and at a sudden forte he would spring up again like a jack-in-the-box. No one can ever forget those spasmodic, but tremendously eloquent, jerks of the chin with its long beard which Dr. Leopold Damrosch used to aim at his men when there was a staccato chord to be played. Who does not recall the eloquent hands of Nikisch and the equally eloquent cuffs of Seidl? Thomas, with his occasional sidewise cant of the head, and Richter, with the apparently increasing confusion of his hair and his beard, also come back to my memories of pictorial peculiarities of conductors.

Besides these peculiarities, conductors have their own habits in the use of the baton, and orchestras must necessarily become accustomed to them in order that they may not be misled at critical moments. For it does, indeed, happen sometimes at the public performances that things go wrong, and then the conductor must contrive to set them straight; and he must do it entirely by his pantomime, for the privilege of the rehearsal, to stop the or-

chestra and begin again, is no longer his. At the rehearsal he can tell what he desires, but in the concert he must go on. It is at the rehearsal, however, that the real work of the conductor is done. At the performance he must confine himself to beating time, to indicating to those players who have rests when they are to begin again, to a warning look here in case a part is played too loudly, or to an encouraging nod there in case one is not played loudly enough.

I have often heard persons not unfamiliar with concerts declare that a conductor was of no use because the players never looked at him. This is a rather large statement. The players do not look at the conductor all the time, because they are obliged to occupy themselves chiefly with reading music, but they look at him frequently, and they do so invariably at essential places. Furthermore, they always see him out of the corners of their eyes, as the saying goes, while they are reading the pages before them.

The function of a conductor, as it stands today, can best be understood by applying to him the definition given at the beginning of this book. The orchestra is an instrument upon which he performs. Hector Berlioz, the famous French composer, said that the only instrument

upon which he could play was the orchestra, and in that he resembled Richard Wagner, who was an indifferent pianist, and Anton Seidl, who was a very bad one. The conductor plays upon an orchestra, not by waving a baton and magnetizing his men, but by carefully instructing them at rehearsal as to what he desires them to do, and by going over it and over it again till the execution of his design is perfected. A conductor, then, must come to the rehearsal with a completely prepared plan of interpretation. He must know the score thoroughly. He must have analyzed every measure. He must be in the same position as the skilled theatrical stage-manager who has planned every bit of "stage business" for a new play before he goes to the first rehearsal.

At the rehearsal he must explain his wishes to the men, and play through each movement of a symphony piece-meal before he undertakes to go through it without a stop. A judicious conductor makes no attempt to put a poetic explanation before his orchestra. He works entirely on the technics of the performance, and leaves the temperament and enthusiasm of his men to do the rest. A conductor once went from another city to Boston to conduct an orchestra at the first appearance in this country of an eminent pianist, whose *pièce de resistance*

was to be Liszt's E flat concerto. At the beginning of the scherzo there are some lightly tripping notes for the triangle, which the player struck too heavily to please the conductor's fancy. He rapped with his baton to stop the orchestra.

"Sir," he said, gravely, addressing the triangle player, "those notes should sound like a blue-bell struck by a fairy."

Whereupon the whole body of instrumentalists burst into uncontrollable laughter. I told this story subsequently to a New York musician, a member of Theodore Thomas's orchestra, and he looked so amazed that I said:

"But doesn't Mr. Thomas talk to you at rehearsal?"

"Oh, yes! Oh, certainly!" was the reply.

"Well, what does he say?"

"He says 'D——n!'"

Richard Wagner, who was nothing if not polemic, wrote a book on conducting, in which there are some pregnant assertions, as there are in all his writings. He says: "The whole duty of a conductor is comprised in his ability always to indicate the right tempo. His choice of tempi will show whether he understands the piece or not. With good players again the true tempo induces correct phrasing and expression, and conversely, with a conductor, the idea of

appropriate phrasing and expression will induce the conception of the true tempo." There is an essential truth in this statement, but its writer did not add those corollaries which are necessary to constitute the whole truth, especially for the amateur. The passage which immediately precedes the above statement explains why Wagner looked upon the tempo as the most important matter for the conductor to decide. He says: "In the days of my youth orchestral pieces at the celebrated Leipsic Gewandhaus concerts were not conducted at all; they were simply played through under the leadership of Concertmeister Mathäi, like overtures and entr'actes at a theatre." Such performances annoyed and discouraged Wagner; but in 1839 he got a valuable lesson from hearing the Conservatoire orchestra of Paris rehearse a Beethoven symphony under Habeneck. "The scales fell from my eyes," he says; "I came to understand the value of correct execution, and the secret of a good performance. The orchestra had learned to look for Beethoven's melody in every bar—that melody which the worthy Leipsic musicians had failed to discover; and the orchestra sang that melody. This was the secret." A little farther on he says: "The French idea of playing an instrument well is to be able to *sing* well upon it. And (as already

said) that superb orchestra sang the symphony. The possibility of its being well sung implies that the true tempo had been found; and this was the second point which impressed me at the time. Old Habeneck was not the medium of any abstract æsthetical inspiration—he was devoid of genius; but he found the right tempo while persistently fixing the attention of his orchestra upon the Melos* of the symphony. The right comprehension of the Melos is the sole guide to the true tempo."

These words of Wagner's are excellent, but they may convey an exaggerated conception of the case to an amateur. It is beyond dispute that if the tempo is incorrect, the performance must inevitably be weak or utterly bad; but it does not follow that when the tempo is right, all will be satisfactory. Nevertheless, it is true that the first and most important duty of the conductor is to decide the tempo, and that he can only do by a complete comprehension of the musical character of the composition. In music written since Beethoven's day the conductor has something to guide him in the matter of tempo, as I shall presently show; but in earlier compositions he will find only such general terms as *allegro*, *adagio*, or *andante*. He

* Melody in all its aspects.

will not even discover such attempts at specification as *andante con moto, allegro pesante*, or *presto ma non troppo.*

These directions are not sufficiently precise. Wagner himself tells how he wrote "Mässig" (moderate) in the score of "Das Rheingold," with the result that the drama took three hours under the opera conductor. "To match this," he adds, "I have been informed that the overture to 'Tannhäuser,' which, when I conducted it at Dresden, used to last 12 minutes, now lasts 20." Wagner notes that Sebastian Bach did not customarily indicate the tempo at all, "which in a truly musical sense is perhaps best." But to leave all movements without tempo marks would be to assume that all conductors were truly gifted. Since Beethoven's latter days it has been the custom of composers to indicate the correct tempo by what is known as the metronome mark.

A metronome is an instrument which can be set to tick off with a pendulum any number of beats from forty to two hundred and eight a minute. A composer desiring to indicate a tempo uses a formula like this: M. M. 𝅗𝅥 = 78. The letters M. M. mean Maelzel's Metronome (the instrument). The note (in this case a minim) means that the beats of the pendulum are to be regarded as representing minims, crotchets, or

quavers, as the case may be. The figure indicates the number of beats per minute. In the above formula the composition would probably be one written in two-fourth time, that is, with one minim to a bar, and the metronome mark would indicate that seventy-eight minims, and hence in this case seventy-eight bars, were to be played each minute.

A metronome mark must not be understood as requiring a rigid adherence to its prescription in every bar of a movement. It is simply a method of expressing the general rate of progress. A conductor could not count every bar by the metronome without abandoning all attempts at accelerandi or ritardandi, and generally reducing his performance to a mathematical state of rectangularity. All flexibility, elegance, and nuance would disappear from such a rendering.

For dance-music played at a ball, strict adherence to the metronome mark throughout a composition would be admissible; and it would be really desirable in the case of a military march, in which the tactics prescribe the cadence as one hundred and twenty steps a minute; but it is not to be tolerated in artistic concert music. The metronome mark establishes the general movement, and that is all.

Any music-lover who desires to find out the right tempo of a metronomed composition can do so by using a watch with a second hand. If he times the number of measures to be played in five or ten seconds, he can get at the tempo. Similarly, he can "hold the watch" on a conductor in the performance of any piece with an established tempo. Here again, however, he must beware of exaggerated accuracy.

If the metronome mark, for example, is a dotted crotchet equal to 104, as in the allegro of the first movement of Beethoven's Seventh Symphony, and the conductor takes the tempo at 108 or 109, there is no ground for serious complaint. But if he should take it at 134, as I once heard it taken by an eminent conductor, the music-lover has ground for a vigorous protest. The reader might amuse himself and get an immense amount of suggestive information by playing some well-known compositions at exaggerated tempi. He would speedily be convinced that Wagner was right in believing that the chief duty of the conductor was to ascertain the correct tempo.

But Wagner is not quite explicit enough when he says that this is the conductor's whole duty. The whole duty of the conductor is to regulate every item of the orchestral perform-

ance. It must be done according to his design. You may say that this prevents all individual warmth on the part of the players, but it need not do so. The conductor is the stage-manager; the instrumentalists are the actors. They play their parts as the conductor tells them to play them; but that need not prevent them from entering fully into the spirit of the work.

The conductor's conception of a composition is to be revealed through the performance by means of the distributions of light and shade, the relative importance given to the outer and inner voices of the score, by the placing of the climaxes of force and speed, and by the detailed accentuation of every phrase. It is at the rehearsals that the conductor imparts to the men of his orchestra his wishes in these matters, and causes them to go over and over certain passages till they are played to his satisfaction. He cannot do any of this at a performance. There he can only beat time, and in doing so remind his men, as I have already said, of what he told them at the rehearsals.

The conductor must see to it that significant passages allotted to instruments not playing the leading melody are brought out. Many of the most beautiful effects of orchestral compositions are contrapuntal, and they are too often

lost through the incapacity or negligence of conductors. It requires close and sympathetic study of a score to find these bits. Who can ever forget how eloquently they were all made to speak in the Wagner dramas by Anton Seidl, and that, too, without ever overbalancing the voices of the singers? The whole warp and woof of the Wagner scores is polyphonic; the motives cross and recross one another in a never-ceasing double, triple, or quadruple counterpoint; and to give each its proper weight in the scale of force, requires, on the part of a conductor, complete knowledge, perfect appreciation, and absolute command of his forces.

In concluding the discussion of this topic let me add that the conductor is responsible for the general excellence of the work of his orchestra in its fundamental qualities. He must see that the balance of tone is preserved, by preventing one choir from playing too loudly to the detriment of another. He must insist upon proper bowing by the strings and equally proper blowing by the wind. And he must persistently drill his orchestra in precision and unanimity until these things become automatic, like the attack of a good singer. He is one of the princes in the kingdom of music, this man who turns his back upon us all that he may play

with his little stick upon this hundred-voiced instrument ; and if sometimes we lose ourselves in hysterical wonder at the results which he produces, and come to think that the baton is a magician's wand, perhaps we are not so much to blame after all.

PART IV

How the Orchestra Grew

XIV

From Peri to Handel

THE orchestra of to-day is the outcome of a long series of developments. In a general manner it may be said that the first combinations of instruments were without special purpose. The reader should bear in mind that for several centuries the whole labor of artistic composers was directed toward the production of unaccompanied church music. The centuries preceding the seventeenth produced little, if any, purely instrumental music. There were some compositions for clavichord, one of the precursors of the piano, and many for the organ; but these were wholly modelled on the great contrapuntal choral works of the church. The style was similar, and the method of development of musical ideas was the same.

When these old composers first wrote for small combinations of instruments, they produced works which could be sung just as readily as they could be played; and, indeed, it was not uncommon for them to write over their

compositions, " Da cantare e sonare "—" to sing or to play." When the thing was sung it was " cantata," and when it was played it was " sonata." But these early " sonatas " were in no respect like those of Beethoven.

The manner of composing for the orchestra naturally developed side by side with an appreciation of the true functions and relations of the various instruments. It is impossible to separate the two processes. Consider that composers had for centuries written only for the human voice heard in masses, and you will readily perceive that it must have taken some time for them to discover that melodic ideas suitable for singing were not always adapted to the utterance of instruments. After the discovery of that fact there would necessarily follow a realization that the method of developing musical ideas in compositions for voices was not the best one for instrumental writing. And then would come also a perception of the fact that certain melodic ideas were best suited to certain instruments; that what a horn could utter most eloquently, was enfeebled if intrusted to an oboe, and that a thought which was poetic in the pallid, moonlight accents of the flute, became vulgar if pealed out by a trombone.

Modern orchestration owes the kaleidoscopic

glories of its instrumental coloring to the mastery which composers have attained over the characteristics of the various instruments. One effect of the long series of experiments made by their predecessors was the establishment of the constitution of the orchestra itself, as well as of the methods of writing for it. As composers came to understand better the nature of each individual instrument, they also acquired a certainty as to the proper place of each in the general scheme. Those which were unnecessary or feeble were set aside, and the inevitable selection and survival of the fittest followed.

It is very difficult, indeed, to ascertain the dates at which the various instruments made their appearance in the orchestra, or to determine by whom each was introduced. Frequently an instrument was employed in some now forgotten composition, and then laid aside for a time before it came to be habitually used. The works of the great composers do not afford safe guidance in this matter, for it was often some obscure writer who first perceived the true value of an instrument. Yet it is possible to trace the general growth of the orchestra, and this is really the most important thing to do.

In the thirteenth, fourteenth, and fifteenth centuries the forerunners of many of the instru-

ments of the modern orchestra were in use in Europe. The early forms of the instruments of the viol family were employed and the bassoon, schalmei (ancestor of the clarinet), horns, trumpets, and kettle-drums are mentioned and illustrated in some of the early books. The harp, of course, was known wherever the troubadour or the gleeman travelled, and that was all over Europe. But there was no system of combining these instruments in any manner that could possibly be recognized as leading toward our orchestra. A troubadour used a harp or a viol to accompany his song. The nobleman carried a hunting horn of brass—the forerunner of the present French horn—and the noble lady went to the chase with a silver horn of smaller size. Drummers and trumpeters found occupation in military organizations, and the town piper sounded the Christmas chorale from the church-tower. The banquets of the nobles were enlivened by instrumental music, but of its artistic nature we cannot form any satisfying conception. The instruments were simply those that chanced to be at hand, and they must have played together in a very rude and elementary style, for we know that prior to the beginning of the seventeenth century no one wrote for an orchestra of any kind.

The first compositions for groups of instru-

ments resembled our chamber music rather than our orchestral compositions. It is the desire of the writer to adhere as closely as possible to the story of the orchestra pure and simple, so nothing need be said here about the instruments employed in these early works. The modern orchestra really began to take shape toward the end of the sixteenth century in pieces of dramatic form, the precursors of the modern opera. In 1565 Striggio and Corteccia scored their intermezze (light plays with much music) for 2 gravicembali (embryo pianos), 4 violins, half-a-dozen different sizes of lutes and lyres, half-a-dozen flutes and flageolets, 3 violas of different registers, 4 cornets, of different powers, 4 trombones, and several minor instruments. The fatal defect of this orchestra was its deficiency in stringed instruments played with a bow, and its large force of brass. It must have been painfully weak in the bass and extremely poor in sustaining power. But as no system of instrumentation had begun to appear at this time, its playing must have been of the most rudimentary kind. As an accompaniment for voices, if it was ever used all at once, it was probably both thin and noisy.

Jacopo Peri, in his "Eurydice" (1600), the first opera performed in public, employed an orchestra consisting of a harpsichord, a lute, a

theorbo (a kind of large lute), a large lyre, and three flutes. But there was little, if anything, in his work which influenced his successors. He used his instruments merely to supply the simplest kind of chord accompaniment to a primitive species of dramatic recitative. Emilio del Cavaliere in the same year produced his oratorio "La Rappresentazione dell' Anima e Corpo," and his orchestra consisted of a double lyre, a harpsichord, a bass lute, and two flutes. One interesting fact about this orchestra is that it was concealed, like that at Bayreuth. But the instruments were not used as a modern composer would have employed even so simple an assembly. Cavaliere, for instance, recommended that a violin should play in unison with the soprano voice throughout the work.

The foundation of the modern orchestra may fairly be attributed to Claudio Monteverde, born at Cremona, 1568, died in Venice, 1643. He was distinctively an operatic writer, and it was in the search after dramatic effects that he discovered the relative values of some of the important instruments, and invented some of the most familiar orchestral devices. In his "Orfeo," produced in 1608, he employed the following list of instruments: 2 harpsichords, 2 bass viols, 10 tenor viols, 1 double harp, "2 little French violins," 2 large guitars, 2 organs of

wood, 2 viole di gamba, 1 regal, 4 trombones, 2 cornets, 1 octave flute, 1 clarion, and 3 trumpets with mutes.

The array of brass in this orchestra is formidable, but we must remember that Monteverde did not use it as a modern writer would. The system of combination which has been developed had hardly begun in his day, and most of "Orfeo" is accompanied by a simple figured bass, so that we are left to infer that the orchestral performers played very much as they pleased through many pages of the work.

The "two little French violins" were undoubtedly such violins as we know to-day, and this is generally regarded as their first appearance in the orchestra; for the four violins enumerated in the intermezzo orchestra of 1565 were most probably members of the old viol family, and not such instruments as we now call violins. To be sure, Monteverde's violins played a very small part, but even that master himself learned something from experience in their use, for in later works we find him depending more and more upon his bowed instruments. The title "French" should not be misleading. The first of the famous violin makers was Gasparo di Salo (1542–1610), the founder of the Brescian school. Brescia is in Lombardy, which province was continually in

the throes of French invasion. That may easily account for the term "French" as applied to these violins.

It was in his "Tancredi e Clorinda," produced in 1624, that Monteverde introduced many novel effects, showing that he had begun to appreciate the expressive powers of his instruments. One of these was the tremolo for bowed instruments. It is said that this passage "so astonished the performers that at first they refused to play it." In the scene of the combat in the opera, the composer, using three violas and a double-bass, wrote a descriptive accompaniment to the recitative. Rhythmic figures, syncopations, alternating scales, as well as the tremolo and the pizzicato, were employed in this, the first independent dramatic orchestration of which we have any record. The real significance of the work lies in the fact that Monteverde here opened up the realm of special instrumental effects, as distinguished from vocal ones, and also indicated the fundamental value of the stringed instruments played with bows.

This truth having been acquired, and the purely military value of trumpets and drums being already known, it was inevitable that composers should move gradually but slowly toward the establishment of the string and brass

choirs of the modern orchestra. The wood-wind came to its position more slowly, chiefly because of the rude and difficult system of fingering, which made the instruments troublesome to learn. The value of their tonal differences was not perceived at an early date, and indeed it was not until near the middle of the eighteenth century that any direct attempts at tone-coloring were made.

The establishment of the string quartet was really the first vital step toward the arrangement of the orchestra of to-day, and this step was the direct result of Monteverde's experiments. For a time there was a tolerable system in which viols of various kinds were used. The thorough-bass was played by the deeper-toned viols, and the harpsichord filled out the harmonies. It must be remembered that at the end of the sixteenth century and beginning of the seventeenth, there were two kinds of viola, the viola da gamba (held between the knees), and the viola da braccia (held at the shoulder), and there were a dozen or more species of these two kinds. But the study of the special characters of instruments led to the selection for permanent use of the best of these. The bass viol became our double-bass; the tenor viola da gamba, the violoncello; the tenor viola da braccia, the viola, and so on. The violin began to make

known its value, and after that progress was steady.

In 1649 Cavalli, in his opera "Giasone," wrote an accompaniment for two violins and a bass in a style which endured for half a century. Only a few years now elapsed before the modern string quartet, in its primitive form, found its way into the orchestra. Alessandro Scarlatti, born in 1659, was one of the great geniuses of Italy, and founded that style of opera of which Bellini, Donizetti, and Rossini were the most popular modern exponents. He enlarged and improved almost every department of operatic writing, and contributed much to the development of the orchestral part.

In its general features his orchestra was not unlike that of to-day. Violins, violas, and basses were its foundation, but their employment was naturally crude. The 'celli always played in unison with the basses, and so, for the most part, did the violas; but there were many instances in which he used his violas independently and even in two parts. The oboe was the principal wind-instrument, while the bassoons were used to strengthen the bass and were seldom heard alone. Flutes were introduced for their special character.* Scarlatti's use of

* The German flute, as it was called, was introduced into the orchestra by Lully, in his "Isis," 1677.

violas independent of the basses and in real parts led him toward the true distribution of the string quartet, and in several of his operas we find him writing accompaniments for two violins, viola, and bass in a style which has been employed frequently by all subsequent composers.

It is not possible to say that Scarlatti invented this style, for it must have been the result of long experimenting ; but he saw its superiority and used it so systematically that it was copied by his successors together with other salient features of his style. The chief importance of this manner of writing was its establishment of the proper distribution of the four notes of a chord among the four instruments. The balance and solidity of tone thus gained was of vital importance to the development of orchestral writing, and of the orchestra itself. Scarlatti gave the treble part to the first violin, the alto to the second, the tenor to the viola, and the bass to the bass ; and that is what composers have done ever since. About the same time we find Alessandro Stradella writing, in a manner afterward employed in their concerti grossi by Bach and Handel, for two solo violins and a solo violoncello, with an accompaniment of violins, violas, and basses.

In France the most important musician of the

period was Jean Baptiste Lully (1633–87), who was also a composer of operas. His orchestra was less elastic than Scarlatti's, yet it was of a type which survived for many years. Its foundation was a body of strings, violins playing the upper parts, and viols of different registers the middle and lower parts. These were supported by a harpsichord, to which was given a figured-bass part. Trumpets, flutes, and oboes were employed to increase the volume of tone and to produce certain obvious color-effects. For example, trumpets were heard in martial passages and oboes in pastoral scenes. Tympani came into the orchestra at this time also. It cannot be said that Lully showed genius for orchestral writing, and for that reason his orchestra is an excellent example of the conventional arrangement of the day. The use of the harpsichord goes to show that composers of that time did not know how to get a full and sonorous harmony out of the purely orchestral instruments, and their attempts to supply the deficiency with the tinkling percussive notes of the keyed instrument were foredoomed to failure.

Giovanni Legrenzi, a famous Venetian composer (1625–90), employed what looked like a fairly rational orchestra. It consisted of 19 violins, 2 violas, 2 viole di gamba, 4 large lutes, 2

cornets, 1 bassoon, and 3 trombones. The chief shortcoming of this orchestra, aside from its deficiency in wood-wind, is its want of stringed basses. A most important contributor to the development of the orchestra at this period was Arcangelo Corelli (1653–1713). He was a great violinist, and, in composing for the violin as a solo and chamber-music instrument, he explored its resources and illustrated its relation to other instruments. Some of his important works were: "Twelve Sonatas for Two Violins and Violoncello, with Bass for the Organ" (Rome, 1683), "Twelve Chamber Sonatas for Two Violins, Violoncello, and Violone, or Cembalo" (Rome, 1685), and "Concerti Grossi," for two solo violins and solo violoncello, with accompaniment for additional instruments (1712). In these works Corelli did much to point the way toward modern chamber music and its forms, and in doing so contributed directly toward that understanding of the relative powers and limits of the members of the string quartet without which good orchestral writing is impossible.

We have now reached the beginning of the eighteenth century. The typical orchestra of the time consisted of strings, distributed in the fashion set by A. Scarlatti, but not always with a correct adjustment of the number of each

kind, two pairs of wind-instruments, and the harpsichord as the impotent agent to fill out the harmonies. It was at this period that two great composers arose and exerted an influence which affected the entire subsequent development of music. These composers were George Frederick Handel (1685–1759) and Johann Sebastian Bach (1685–1750). Both of these writers made improvements in the orchestra and in orchestral music. Something has already been said about their methods of writing for the orchestra, but the reader will pardon some repetition of facts which throw light on the constitution of the orchestral body under these composers. Bach was essentially a polyphonic writer, and he treated his orchestral instruments as if they were voices. Each one had an essentially melodic part to sing, and the beautiful interweaving of these voice parts constitutes one of the never-ending charms of the great master's music. He contrasted with this style passages of extreme simplicity, in which the strings and the keyed instrument—organ or clavier—were used.

Handel, on the other hand, was chiefly a composer of operas and oratorios, and his orchestral style was developed to a considerable extent in the direction of building up huge climaxes by means of mass effects. It may be

said, therefore, with some reservation, yet with general correctness, that Bach's orchestral style has afforded later composers a model for solo effects in the orchestra, while for solidity and sonority of the entire instrumental body Handel has been mainly followed. One of the forms in which Bach exercised his genius was the Concerto Grosso, in which two or three solo instruments, instead of one, are heard with orchestral accompaniment. In 1721 Bach wrote six of these works, known as the Brandenburg Concertos. Only one of these, the first, would be regarded as an orchestral work in our time. The others belong rather to the department of chamber music, though by increasing the number of instruments in each part they may be made to have an orchestral effect. The first concerto, however, was written for the string quartet, aided by the double-bass and the violino piccolo (a little violin with a high compass), two horns, two oboes, bassoon, and harpsichord. These instruments were employed in three groups: horns, wood, and strings; but one must remember that Bach's polyphonic method of using his wind-instruments was altogether different from the manner in which the same instruments are now employed.

In his church music Bach combined the orchestra and the organ. As Dr. Spitta points

out in his biography of Bach, the organ in these works occupied a position similar to that of the string quartet in the modern orchestra. "Just as the wind-instruments group themselves round this as a centre," he says, "so all the instruments grouped themselves round the organ. The relations were different, however, in this way: that the organ remained always in the background, its effect being merely that of power, and that on this background the other instruments were seen not so much as solo instruments, but rather as choric groups. One of these groups was the quartet of strings, another the oboes and bassoon, a third the cornet and trombones, and a fourth the trumpets (or sometimes horns) and the drums." Bach's method of writing for the orchestra did not influence his immediate successors very greatly, for the reason that his retired life and modest position prevented his works from becoming generally known until long after his death. Sir John Hawkins's "History of Music," published in England in 1776, contains only half a page about Bach, communicated to the author by one of Bach's sons, a resident of London.

Handel, on the other hand, enjoyed a world-wide fame during his life, and his works were studied by musicians far and near. Handel employed, though very rarely all at once,

all the instruments used in the modern orchestra except the clarinet. He approached more nearly than Bach to the modern methods of orchestral contrast in massive effects of instrumental color, yet he did not reach the fundamental principles on which the distribution of the instruments in the orchestra of to-day rest. Perhaps the most important difference is to be found in the large number of wind-instruments employed by Handel, who used them frequently in masses simply to reinforce the strings. The number of oboes and bassoons, for instance, was much larger in Handel's orchestra than in a modern band. This was due partly to the inferior power of the instruments of his time, but equally to the different method of his scoring. The brass instruments were used by both Bach and Handel differently from the manner in which modern composers employ them. The reader will recall that they wrote trumpet parts of such high compass that players of to-day cannot perform them. In conclusion, as to Bach and Handel it should be noted that their orchestration is rarely heard. Most of their great works, such as the "St. Matthew Passion" and "The Messiah," are performed now with modern orchestral arrangements, not according to the original scores.

XV

From Haydn to Wagner

THE constitution of the orchestra in the early part of the eighteenth century, then, had reached the basis on which it now rests, except for the fact that the harpsichord was still used. There was, however, a complete and well-organized body of strings, similar to that which we have to-day. The violoncello alone had not attained its true position. It was not always included, and generally when it was, it played in unison with the double-basses. To the body of strings were added such wind-instruments as the composer desired—two oboes, two bassoons, and two horns being, perhaps, the most familiar assortment. Two trumpets and a pair of kettle-drums were introduced when brilliant militant passages were to be written. Trombones were not heard in symphonic compositions, and the harp seemed to have fallen into oblivion. The clarinet had not yet entered the orchestra. Flutes were used often. The systematic use of wood-wind instruments in pairs

was just beginning. The delay in this vital matter was due to the hold which the polyphonic style of composition still had. It was only when the musical world gave up writing fugues and canons and turned its attention to the harmonic style, in which a song-like melody is supported by an accompaniment built on chords, that the value of the wind choir in the formation of these chords was appreciated. That fact once known, composers speedily established the balance of power between wind and strings, and arranged a suitable list of wind-instruments.

The orchestral symphony came into existence about the middle of the eighteenth century, and with its advent we find the orchestra of Bach and Handel slightly modified and differently employed. Joseph Haydn (1732–1809) is credited with being the father of the symphony, and he established the real basis of the modern orchestra. Yet something was due to the labors of two or three other men. Of these, I have already mentioned one of the most important, Johann Karl Stamitz, a Bohemian, who in 1745 became leading violin and director of the orchestra of the Elector of Mannheim. He spared no efforts to teach his strings to play with precision and refinement, to phrase beautifully, and to make all the shades of piano and forte. His orchestra became the best in Eu-

rope, and his methods survived him. Mozart heard at Mannheim for the first time in his life artistic orchestral performance, and he was deeply influenced by it.

Another, who has been mentioned and who exercised much influence on the orchestra through his study of its capacities, was François Joseph Gossec (1733–1829). He was a student of the orchestra in early life, and his first symphony was performed five years before Haydn's. How much insight into orchestral effect Gossec possessed may be judged from the fact that in his "Messe des Morts" (1760) he wrote the "Tuba Mirum" for two groups of instruments, one of wind-instruments concealed outside the church, and the other of strings inside, the latter accompanying the former with a tremolo in the high register.

Haydn's first symphony was written in 1759 for first and second violins, violas, basses, two oboes and two horns. His last symphony was composed in 1795, and by that time he had at his command the whole symphonic orchestra as it stood when Beethoven took up the work of orchestral development. Between the dates of Haydn's first and last symphony, Mozart had lived the whole of his wonderful life, and Haydn, who at first had been his master, had in the end become his pupil.

It was from Mozart that Haydn learned the use of the clarinet, and we find it employed in his last symphonies. The clarinet proper, which was the successor of the schalmei or shawm, is said to have been invented by Johann Denner, of Nuremberg, in 1690. The claim is doubtful, yet the modern instrument probably originated about that time. Many improvements have been made in it, the most notable being the application to it by Klosé, in 1843, of the Boehm system of fingering.

Haydn's familiar symphony in D, written in London in 1795, is scored for 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 2 horns, kettle-drums, violins, violas, 'cellos, and bassos. It is a fact that Haydn first employed 2 clarinets and a bassoon as the wood-wind choir in his first mass, written in 1751 or 1752, but it was Mozart who revealed the real capacity of the clarinet and established its position in the orchestra. Haydn, however, must be credited with immense advances in the development of the orchestra, because in developing the symphonic form, he was constantly experimenting and discovering the values of the various instruments and their relations to one another. Some of the symphonies composed after he had been a symphonic writer for years, show great reticence in their scoring. For example, the sym-

phony known as the "Queen of France," written for Paris in 1786, is scored for 2 horns, 2 oboes, 1 flute, 2 bassoons, and string quartet. The introduction to the "Creation," one of the master's latest works, is scored for 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, a contra-bassoon, 2 horns, 2 trumpets, 3 trombones, tympani, and the usual strings. But when he was writing this oratorio Haydn needed a large orchestra for his newly invented effects of instrumental description. In the "Creation" and "The Seasons" he made the orchestra paint chaos, winter storms, and spring peace. He naturally sought for more instrumental voices, and employed the complete orchestra of his time.

Much of Haydn's success in developing the orchestra and the art of writing for it was due to his long occupancy of the post of director of music under Prince Esterhazy. Haydn was appointed to this post at Eisenstadt in 1761, and retained it till 1790. He had at his disposal a small company of singers, capable of performing opera or oratorio, and a small orchestra. In 1766 this orchestra numbered 17 instruments: 6 violins and violas, 1 violoncello, 1 double-bass, 1 flute, 2 oboes, 2 bassoons, and 4 horns. It was subsequently enlarged to 22 and 24, including trumpets and kettle-drums when needed. From 1776 to 1778 there were

also clarinets. That this arrangement did not prevail all over Europe even at that time is shown by the distribution of instruments and seating-plan of the orchestra at Dresden under Hasse, near the close of the last century. This plan is reproduced from Jahn's "Life of Mozart."

1—Conductor's harpsichord.
2—Second harpsichord.
3—Violoncelli.
4—Double-basses.
5—First Violins.
6—Second Violins.
7—Oboes.
8—Flutes.
a—Violas.
b—Bassoons.
c—Horns.
d—Trumpets and drums on platforms.

The preponderance of bassoons in the Dresden orchestra was due to the fact that it was an opera orchestra, and in it Handelian ideas still prevailed. Haydn, meanwhile, was proceeding along the true symphonic path, and an orchestra of 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 2 horns, 2 trumpets, tympani, and strings fairly represents the result of his contributions to its development up to the time when Mozart took up the work. It should be added that even Haydn was not sufficiently trustful of his instrumental army to leave it without the weak support of the harpsichord,

and he frequently sat at this instrument during the performance of his symphonies and played with the orchestra, with extremely bad effect.

Wolfgang Amadeus Mozart (1756–1791) applied his amazing genius to the development of the orchestra, as well as to all other departments of musical art. His work was rather that of exploring the capacities of the instruments in use than adding new ones to the extant list. That was in keeping with Mozart's entire career. He was not a reformer; he took what he found and put genuine life into it. He found clarinets, for example, and he illustrated, to the conviction of all subsequent composers, their true place in the orchestra.

Indeed, he made a complete revelation of the powers of wind-instrument choirs in his suites and divertimenti for them, so that Haydn once complained to Kalkenbrenner: "I have only learnt the proper use of wind-instruments in my old age, and now I must pass away without turning my knowledge to account." Mozart's three greatest symphonies are those composed in the summer of 1788, the E flat major, G minor, and C ("Jupiter"). The E flat is scored for 1 flute, 2 clarinets, 2 bassoons, 2 horns, 2 trumpets, tympani, and strings. The G minor is written for 1 flute, 2 oboes, 2 bassoons, 2 horns, and strings, but owing to

Mozart's insight into the effect of combinations, this small orchestra sounds marvellously full and noble. Clarinets were afterward added. The "Jupiter" symphony is scored for 1 flute, 2 oboes, 2 bassoons, 2 horns, 2 trumpets, tympani, and strings.

It will be seen from this that although Mozart established the place of the clarinet, he did not invariably make use of it, while even up to the date of these last symphonies, the trombone had not assumed a position in the symphonic orchestra. Mozart was always moderate in his use of this instrument. In his "Don Giovanni" he reserves his trombones to accompany the ghost of the *Commendatore*. In "Die Zauberflöte" they are used more freely, as, indeed, they always were in religious or masonic music. In "Die Zauberflöte" Mozart also used basset-horns, the tenor of the clarinet, now obsolete. In fact, at all times in the early and classical periods, a larger array of instruments was called into service in the operatic than in the symphonic orchestra. It is only since the romantic composers began to paint in gorgeous tone-coloring, rather than work out intellectual plans of thematic development, that the symphonic band has equalled the operatic in the variety of its component elements.

The development of the orchestra in the hands

of the greatest of all symphonic composers, Ludwig van Beethoven (1770–1827), was of immense importance. Beethoven did not add greatly to the array of instruments, but he demonstrated the true relationships of the various bodies, and he enlarged them and their scope according to his desire for greater utterance. In the First Symphony, C major (1800), and the Second, D major (1803), he employs the same orchestra: 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 2 horns, 2 trumpets, tympani, first and second violins, violas, and basses. It is worthy of note that the 'cello is not specified. In the Third Symphony, "Eroica," E flat major (1805), he used the same orchestra, except that he added a third horn part and wrote "violoncello e basso."

It is believed that three horns were employed in the symphonic orchestra for the first time in this work. Mozart used four in "Idomeneo" (1781). The Fourth Symphony, B flat (1807), is a smaller work, and its orchestra is the same as that of the First and Second, except that only one flute is required and the 'cello is named. The great Fifth Symphony, C minor (1808), is scored for 1 piccolo, 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, contra-bassoon, 2 horns, 2 trumpets, 3 trombones, drums, and strings. Sir George Grove notes that "the piccolo, trombones, and

contra-fagotto are employed in the finale only, and make their appearance here for the first time in the symphonies. The contra-fagotto was first known to Beethoven in his youth at Bonn, where the Elector's orchestra contained one. He has employed it also in 'Fidelio,' in the Ninth Symphony, and elsewhere."

The Sixth Symphony, known as the "Pastoral" (1808), is scored for 1 piccolo, 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 2 horns, 2 trumpets, 2 trombones, drums, and strings. The piccolo and trombones were used for special descriptive effects in this work, and when he came to write the great Seventh Symphony (1813), Beethoven employed the same array of instruments as he had in his First and Second symphonies. The same orchestra sufficed for the Eighth Symphony (1814), but the Titanic Ninth (1824) demanded a larger instrumental body. The score calls for 1 piccolo, 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 1 contra-bassoon, 4 horns, 2 trumpets, 3 trombones, tympani, triangle, cymbals, bass drum, and strings. Four horns are here used for the first time in the symphonic orchestra, and their introduction completed the development of the classical body of instruments.

When the romantic writers began to advance along the path opened by Beethoven and to seek

for broader and more influental emotional expression, they introduced one or two more instruments for special effects. The English horn was known to Bach in its primitive form of oboe da caccia. It was used by Gluck in his "Orfeo" and "Telemacho," but, as Berlioz notes, without apparent appreciation of its tone-quality. In its modern form it was introduced into the orchestra by Rossini in "William Tell" (1829), and Meyerbeer in "Robert le Diable" (1831). Modern symphonic writers use it freely. Its employment in their music is probably due to the demonstration of its utility by the eminent French composer, Hector Berlioz (1803–69), who had a truly wonderful insight into the powers of all orchestral instruments, and who laid down the principles of the post-Beethovenian style of orchestral writing. We find Schubert, Schumann, Mendelssohn, and other immediate followers of Beethoven using precisely the same orchestra, sometimes with two horns and sometimes with four, and seldom without trombones, throughout an entire work. Berlioz, however, began at once to give variety to the instrumental body. For instance, so small a work as his arrangement for orchestra of Weber's "Invitation à la Valse" is scored for 1 piccolo, 1 flute, 2 oboes, 2 clarinets, 4 bassoons, 4 horns, 1 cornet, 1 trumpet, 3 trom-

From a photograph by Reutlinger.

BERLIOZ.

VERSITY OF ARIZONA
LIBRA

bones, 2 harps, tympani, and strings. The harp, as we have noted, had been used in the opera, but Berlioz was the first to explore its possibilities. Many of Berlioz's other advances in the use of orchestral instruments were owing to the introduction, in 1832, of the system of boring and keying wind-instruments invented by Theobald Boehm. This system vastly increased the agility of these instruments and improved their intonation.

Naturally, some of Berlioz's ideas were borrowed from the operatic composers, who frequently employed unusual combinations for dramatic effects. In the "Quorum hodie" of his "Requiem," for instance, Berlioz calls for 3 flutes, 8 tenor trombones, and strings to accompany a chorus. The "Dies Iræ" of the same mass calls for 4 small brass bands to be placed at the corners of the main instrumental body, and for 14 kettle-drums tuned to different notes. But at present we are more concerned with the direct development of the orchestra than with special combinations. The bass clarinet was seldom used till Adolph Sax, the famous instrument-maker, perfected its construction. Meyerbeer, who was a great friend of Sax, introduced the instrument in his opera scores. He gives to it a fine declamatory passage in "Les Huguenots" (Act V.), and gives it a melodic

part in the coronation march in "Le Prophète." It was Wagner, however, who fully illustrated the capacity of this noble instrument, and by his employment of it, both as a solo singer and a fundamental bass of the wood-wind, led contemporaneous symphonic writers to employ it freely.

The brass choir has been enlarged since Beethoven's day by the addition of the bass tuba, an instrument which came into use only after Sax had perfected its mechanism. Before that the ophicleide, a bass instrument of the keyed bugle family, was occasionally employed. Mendelssohn calls for it in the score of his "Midsummer Night's Dream," and Berlioz has four in the score of his "Requiem." These parts are now played on tubas. Additional trumpets are often used to strengthen the brass, and Wagner even caused tenor tubas to be made to give certain tone-tints, together with sonority, to the funeral march of "Götterdämmerung." All kinds of instruments of percussion are introduced when their peculiarities are desired, and, as already said, bells, gongs, triangles, and even the vulgar xylophone, find something to do in the modern orchestra.

In the first opera, Peri's "Eurydice," as we have seen, the orchestra consisted of a harpsichord, a large guitar, a viol, a large lute, and

three flutes. Two centuries and a half later, in 1850, the overture to Wagner's "Lohengrin" called for 3 flutes, 2 oboes, 1 English horn, 2 clarinets, 1 bass clarinet, 3 bassoons, 4 horns, 3 trumpets, 3 trombones, 1 bass tuba, kettle-drums, cymbals, and strings. In the third act of "Die Walküre" the same composer calls for 2 piccolos, 2 flutes, 3 oboes, 1 English horn, 3 clarinets, 1 bass clarinet, 3 bassoons, 8 horns, 4 trumpets, 1 bass trumpet, 4 trombones, 1 contra-bass tuba, 4 kettle-drums, cymbals and bass drum, harp and strings. How this enormous growth has been accomplished the author has endeavored to outline. The reader will perceive, however, that the fundamental arrangement of the orchestra, as left to us by Haydn and Mozart, has not been altered, but simply extended. As I have already noted, the aims of the romantic composers in the direction of tone-coloring have led to this extension. Yet by means of modern methods of instrumentation, glowing results can be obtained from the symphonic orchestra employed by Beethoven. An excellent instance of this is the "Symphonie Pathétique" of Tschaikowsky, which adds only the bass tuba to Beethoven's orchestra. Gounod, in his "Redemption," a richly orchestrated work, employs 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 4 horns, 2 trumpets, 3 trombones, tympani,

bass drum and cymbals, strings and organ in one of the most effective passages. On the other hand, Jean Louis Nicode, in the "Phosphorescent Lights" movement of his symphonic ode "The Sea"—a movement of purely descriptive and imitative music—calls for a concealed brass band consisting of 3 trumpets, 7 trombones, and a bass tuba, together with 1 piccolo, 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 4 horns, 2 tenor tubas, 1 bass tuba, 2 pairs of kettle-drums, 1 pair of cymbals, 1 triangle, 1 bass drum, 1 gong, 1 set of bells, 2 harps, and the usual strings.

The proportion of power and the balance of tone in the orchestra are preserved by having more stringed than wind instruments. It requires many violins and basses to balance the wood and brass in a forte passage, and, furthermore, the strings themselves lack solidity if there are only a few. As an example of a well-balanced orchestra, we may take the Boston Symphony, which is organized as follows: 16 first violins, 14 second, 10 violas, 10 violoncellos, 8 double-basses, 3 flutes, 2 oboes, 1 English horn, 3 clarinets, 3 bassoons, 4 trumpets, 4 horns, 3 trombones, 2 tenor tubas, 2 bass tubas, 1 contra-bass tuba, 2 pairs of tympani, 1 bass-drum, 1 pair of cymbals, 1 harp. The additional wind-instruments are, of course, used only in com-

positions which call for them. An excellent example of a great festival orchestra was that conducted by Theodore Thomas at the New York Music Festival of 1882. It consisted of 50 first violins, 50 second violins, 36 violas, 36 violoncellos, 40 double-basses, 6 harps, 6 flutes, 2 piccolos, 7 oboes, 2 English horns, 6 clarinets, 2 bass clarinets, 6 bassoons, 2 contra-bassoons, 9 horns, 2 Sax horns, 11 cornets, 3 trumpets, 1 bass trumpet, 9 trombones, 3 tubas, 4 pairs of kettle-drums, 2 bass drums, 2 pairs of cymbals, 3 small drums, and 2 triangles.

PART V

How Orchestral Music Grew

XVI

From Bach to Haydn

A BOOK on the orchestra might be regarded as complete without this chapter, yet it seems to the author that a few suggestions as to the nature and aims of the different kinds of orchestral music heard at concerts may not be unwelcome to the reader. It is always desirable to know what to listen for in a musical composition, because many disappointments are thus avoided. A person who hopes to hear in a Bach fugue the gorgeous masses of tone which are characteristic of a contemporaneous orchestral piece, will certainly declare Bach to be a dry and uninteresting composer. Equally he who hopes to discover in Rimsky-Korsakow's "Scheherezade" suite the intellectual development of the Eighth Symphony, will assert that the talented Russian is no composer at all.

The compositions of Johann Sebastian Bach (1685–1750) lie a little to one side of the direct path of orchestral development, and many of them were contemporaneous with works which

are in form and treatment of a more modern style. Nevertheless, Bach's works mark the epoch from which any review of orchestral music must start. During the Middle Ages the artistic composers of music were almost wholly absorbed in writing for the Roman Catholic Church. Their compositions were for voices without accompaniment, and consisted of great Gothic structures of polyphonic music. In this kind of music every voice was at the same instant engaged in singing different parts of the same melody, the melody being so cunningly made that these different phrases, when heard together, would produce harmony. It was late in the sixteenth century that instrumental music began to develop independently, and the composers employed for it the same style as they had used in their church masses. Early instrumental music is polyphonic, and the full and final development of this style of composition is found in the fugues and concerti grossi of Bach. Handel also wrote concerti grossi, and they, too, partake of the polyphonic character.

The essential trait of this kind of music is the interweaving of the various melodic voice-parts and the effects obtained by their working against one another. Polyphonic writing is the most profound and serious style of composition, and it is also that which best endures

the test of time. Modern composers have fully realized that fact and have introduced a new polyphony into their works. It is what is called free counterpoint, by which is meant the working together of several voices which do not sing different parts of the same melody at the same time, but only at points suitable to the composer's purpose, while at other points new melodic ideas may be introduced. But in the early polyphonic music the listener will hear chiefly the interweaving of voice-parts of the same melody, and he will miss all the beauty and intellectual finish of these works if he seeks simply for the sensuous sweetness of instrumental tints. Usually the orchestral color is distinguished by sobriety, and the profoundly thoughtful nature of contrapuntal music causes a general austerity of instrumental diction. I have already mentioned the historical fact that orchestral tone-coloring began with Mozart. But this was necessarily the case, for the early contrapuntal writers were too wholly absorbed in the development of form to study the resources of color. The operatic writers were the first to seek for color-effects, just as they were the first to use abrupt changes of rhythm and startling dissonances in their search after dramatic expression.

The working out of formal perfection filled

the early classic as well as the late polyphonic period, but the form was different. With the birth of opera there entered into modern music a new power, that of the vocal solo with subordinate accompaniment; and composers at once sought for a new form in which they could cast their melodic ideas so that they would be interesting and artistic when sung by one voice instead of several. The development of these monophonic forms occupied the early classical composers. They obtained their most pregnant suggestion from the operatic *aria da capo.* In this kind of song there are three sections, the first and third being the same melody, and the middle one being different and contrasting. This form suggested to instrumental composers the cycle, which lies at the foundation of most instrumental compositions of the classic period. The classic overture, for example, consisted of three movements (without breaks), slow, fast, and slow, or fast, slow, and fast. And it was customary to repeat in the last one the principal melodic idea of the first. The first movement of a symphony or a piano sonata (for a symphony is a sonata for orchestra) is built on a similar plan. Certain melodic ideas, called themes or subjects, are set forth in the first section. Then follows a middle section called the free fantasia or "working-out," and in this the

melodic subject-matter is literally worked out. It is submitted to various processes of musical development, such as changes of harmony, changes of rhythm, different instrumental treatments, polyphonic expression, etc., till there is nothing more to say, and then the third section restates the original matter in its first shape and adds a coda (tail-piece), by which the movement is brought to a conclusion. The development of this form was aided by the instrumental suite, a form which consisted of series of dances of different kinds. These suites helped the symphonic composers to perceive the value of alternating different sorts of movements, so that symphonies began with an allegro, constructed on the cyclical pattern just described, and continued with an adagio, a minuet, and a finale.

The development of this form occupied the attention of instrumental composers from, say the publication of Corelli's first sonata (so-called), in 1685, till the close of the seventeenth century. By that time it was fully developed, and was ready for such modifications as might be suggested by the entrance of a new purpose into the field of instrumental composition. The symphonies of Haydn and Mozart and the first two of Beethoven belong to this period of the development of the symphon-

ic form, which is also known as the Classic Period.

The lover of music who desires to listen with intelligence and to bring the faculty of judgment to the guidance of his fancy, should study the history of music, because from an acquaintance with that subject he will acquire a correct point of view. It is impossible in the limits of two short chapters in a volume of this size to do more than indicate in the most general manner the salient points in the development of orchestral music. Therefore, I must content myself with inviting the reader to note that these two early periods of musical history, the Polyphonic and the Classic, were occupied chiefly with the labors of composers engaged in the establishment of methods. Two general classes of forms, the polyphonic and the monophonic, were developed, and the manner of elaborating musical ideas and of instrumental technic suitable to each was fairly established. But it cannot be said that the early classic composers advanced beyond the exclusively musical limits of their art. The music-lover will look in vain for the note of profound human emotion in the symphonies of Haydn and Mozart.

The dramatic power of unsupported instrumental music had not yet been felt by compos-

ers, because they were engaged, not in studying the capacity of their art for the symbolism of ideas extraneous to itself, but in exploring its purely æsthetic resources. Music was still to them an end, not a means. They sought only for beauty, and they aimed at producing it by the employment of the technical details of forms and idioms peculiar to their own art. While the polyphonic writers had utilized the interweaving of different parts of the same melody, the classic composers exercised their taste, ingenuity, and feeling in developing melodic subjects in a vocal solo style, with a support of harmonies built on chords, of which the melody was an inseparable part. Their orchestral method differed from that of the polyphonic school because their manner of composing compelled a change. Bach's way of using every instrument as a solo voice was no longer available. The melodic subjects of a symphony must always predominate. Now they flow to us from the strings, now from the wood, again from the brass; but always with chord harmonies. Hence, we find the classic composers using wind-instruments in pairs and making different combinations of the various groups of instruments, so that simultaneously with the process of thematic development and working-out (which is the drawing of the sym-

phonic tone-picture), there is a constant change of the color-scheme, and thus the melodic and harmonic details are heightened by a judicious use of the tonal qualities of the voices which sing them to us. The skill of composers in using these tonal qualities and the technical expertness of orchestral players grew so fast that in the course of time, as we shall see, they came to a position of undue prominence in orchestral music; but this state of affairs was largely hastened by the employment of vivid color-effects by the romanticists in their endeavors to obtain dramatic utterance from the orchestra.

The music-lover who listens to orchestral music of the classic period must not expect anything but a clear and perspicuous presentation of music for its own sake. Sunny transparency is the chief characteristic of the instrumentation of Haydn and Mozart, while the technical construction of their works makes it incumbent upon the listener to follow the purely musical working-out of the subjects announced. The instrumental color-scheme is neither wide nor brilliant, but it is as admirably adapted to the subject-matter as the subdued greens of Corot are to his peaceful bucolic scenes. To appreciate thoroughly the works of Haydn and Mozart a music-lover should have the fundamental principles of

musical form at his fingers' ends, and he should know the voices of the instruments. The rest is child's play. The knowledge of musical form is indispensable to the right enjoyment of all music, but it is peculiarly necessary in these classic works, in which pure beauty of form was the ultimate object.

XVII

From Beethoven to Richard Strauss

OF the early classic writers only Haydn and Mozart have survived the test of time, and neither of them figures frequently in contemporaneous concert programmes. This is a pity, for their music would often serve as a corrective to a taste which is inclined to clamor ceaselessly for "ginger hot i' the mouth." But it is beyond dispute that the romantic composers awaken more sympathetic chords in the modern bosom. Beethoven is the connecting link between the classic and romantic schools.

His First and Second Symphonies belong to the former; the rest to the latter. The modern romantic school of music sprang from Beethoven's "Eroica" symphony, his opera "Fidelio," Schubert's marvellous songs, and Weber's "Der Freischütz." In so far as purely orchestral music is concerned, however, Beethoven was the master of them all. It was he who first showed musicians how to project

emotion through the orchestral melos. If Mendelssohn's fanciful little piano pieces are songs without words, then Beethoven's Third, Fifth, Sixth and Seventh symphonies are dramas without text.

In form and technical method these works follow the general plan of the classic symphonies of Haydn and Mozart. Indeed, the C minor symphony of Beethoven is the finest and most fully developed specimen of that form. But Beethoven made certain changes which came from the nature of his search after emotional expression. He modulated into foreign keys with greater freedom than his predecessors, and he made wider gaps between the keys of his successive movements. A complex and changeful harmonic basis has always been associated with emotional expression in music. Simple harmonies are restful, peaceful, and suggestive of serenity of the soul; frequent modulations and unfinished cadences express uneasiness of mind — largely because they create it.

In addition to this advance, Beethoven also found it possible to knit the melodic structure of his works much more firmly. He introduced his second subjects, for instance, by means of transitional passages made out of some of the materials of his first subjects. His work-

ing-out processes were infinitely broader and grander than those of his predecessors, and they invariably led to strenuous and stimulating climaxes, not found in the earlier symphonies. Beethoven substituted for the old minuet movement the scherzo, which resembles the minuet in form, but differs wholly from it in spirit. The word scherzo means "jest," and the movement was at first intended to be humorous or playful; but Beethoven sometimes gave it the grim mystery of tragic suspense, as in the Fifth Symphony.

Beethoven's manner of instrumentation has already been discussed to some extent. It is necessary only to add that it shows a profounder insight into the special character of each instrument than that of any writer who preceded him. This was the result of the composer's search after influential emotional expression, and of his complete dependence for it upon his instruments. The advances of Beethoven in the treatment of orchestral forms led the romantic composers to perceive that they could make still larger changes without infringing the fundamental laws upon which the artistic development of musical ideas proceeded.

Robert Schumann's symphonies are notable examples of the methods adopted by the ro-

mantic writers. His symphony in D minor is intended to be played without any pauses between the consecutive movements, and melodic material introduced in one movement is employed in the development of another. Thus the principal theme of the first movement recurs in a significantly modified form in the last, and an idea heard in the introduction is repeated with much meaning in the scherzo.

These innovations were the direct result of attempts to give to music a more definite emotional force, and they were brought about by Beethoven's convincing demonstration of the dramatic expressiveness of orchestral music. The highly wrought overtures of Weber, as well as those of Beethoven, had an additional value in showing later composers how to utilize the suggestive power of a title in combination with characteristic methods of instrumental utterance. Haydn, in his "Creation," had invented some of the now conventional figures of orchestral utterance, such as the rolling of waves and the raging of storms. Beethoven's storm in the "Pastoral" symphony went farther, and, mild as it sounds now, was a remarkable achievement in its day. Spohr began to write symphonies with descriptive titles such as the "Leonore" (founded on a

poem by Burger) and "The Power of Sound." Mendelssohn wrote descriptive overtures such as "Fingal's Cave," and in his "Midsummer Night's Dream" music suggested how far the purely illustrative powers of orchestral song might go.

It required very little experimenting in this kind of composition to show musicians that the prescribed forms of the classic symphony and overture were unsuited to it. It was quite impossible to embody in music, developed strictly on lines designed for the exploitation of pure musical beauty, a series of emotions which moved according to wholly different laws. The famous pianist, Franz Liszt, to meet the requirements of the new school, invented the symphonic poem, a composition symphonic in style, but smaller in extent and without any pause between the movements. These are welded together by connecting matter which causes the passage from one to the other to be barely perceptible. The movements themselves are distributed wholly according to the sequence of the principal emotional moods of the story which is to be illustrated. The fundamental laws of musical form are, of course, observed; but conventional formulæ are not followed.

Liszt employed all the symphonic devices

of thematic development in his symphonic poems, and his immediate imitators followed his example. But many later composers have abandoned almost the whole symphonic scheme, so that the works of the first masters of the romantic school belong to a period of transition between the late classicists and the ultra-romanticists of our time.

The reader must not understand me as intending to say that the form of the classic symphony has been universally abandoned. On the contrary, one of the most agreeable of living composers, Antonin Dvořák, clings to it, and there are many others who still find that they can say all they wish to say through the medium used by Beethoven. Brahms was the finest recent exponent of the classic symphony. But there is undoubtedly a growing tendency among composers to make their orchestral works vast color-pictures. The themes in these works are subjected to little or no real musical development, but are brought forward again and again in new instrumental garbs, and instead of reaching climaxes by devices of melodic evolution, the composers aim at producing dramatic effects by imposing or vivid instrumental coloring.

At the same time these composers employ a most complex polyphony, for their scores teem

with melodic utterance in all the principal voices. Richard Strauss, of Munich, is the leading writer of this school of orchestral colorists. His works show supreme mastery of the technics of orchestration, the most intimate acquaintance with the special characteristics of the various instruments, and a really remarkable knowledge of the results to be gained by the mixture of tone-tints. It is the opinion of the present writer that Strauss seeks to express in music things which cannot, and some which ought not, to be so expressed; but that is a matter which need not be discussed here. It is undeniable that in form and treatment this composer's works are in the direct line of the general tendency of orchestral music in our day, and it is equally undeniable that his mastery of the technics of the present style of writing is greater than that of any other composer.

I have endeavored in this brief survey of orchestral music to show the reader how it began with the most rigid and logical forms, in which the laws of thematic evolution were applied with the intent to attain purely musical beauty; and how, as the technics of instrumentation became better understood, the employment of instrumental coloring led composers away from rigorous thematic development

toward a species of composition in which dramatic effects were obtained by a more free method of construction and a larger use of color-effects.

From this we appear at present to be passing into a period in which these color-effects alone are to be called upon as the means of orchestral expression.

It is quite impossible for us who are contemporaneous with this new school to decide as to its value. It is enough for us to recognize its tendencies and watch their evolution. What I have attempted to do in this chapter is to point out briefly to the reader the salient traits of the orchestral music of the different periods, to the end that in listening he might endeavor to find his enjoyment where the composer intended that he should find it, and not be disappointed from an unwise attempt to find it somewhere else. The observant music-lover will find, I think, that the development of orchestration has been perfectly normal, and that the instrumentation of each period is perfectly fitted to its music. A symphony of Mozart orchestrated in the Richard Strauss style would be a tinted Venus; while a tone poem of Strauss scored à la Mozart would be like one of Cropsey's autumn landscapes reduced to the dead level of a pen-and-ink drawing. It is largely because of this or-

ganic union between music and its orchestral garb that the amateur ought to strive to understand the nature and purpose of orchestration. The addition to his enjoyment of all orchestral music will be far more than sufficient to pay for the labor of the study.

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